INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN FOR 293rd BSB Mannheim 2003-2007

VOLUME I – GENERAL INFORMATION

FINAL

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293rd BSB Mannheim

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ACRONYMS

AAFES	Army/Air Force Exchange Service
AEC	Activity Environmental Coordinator
AFH	Army Family Housing
AFPMB	Armed Forces Pest Management Board
ABG	Auftragsbautengrundsätze
AMC	Army Materiel Command
ANSI	American National Standards Institute
AOR	Area of Responsibility
AR	Army Regulation
ASG	Area Support Group
ATC	Army Training Command
BASOPS	Base Operations
BfN	*Bundesamt für Naturschutz* (Federal Nature Protection Authority)
BFV	Benjamin Franklin Village
BSB	Base Support Battalion
CADD	Computer Aided Drafting and Design
CAP	Conservation Assistance Program
CENTAG	Central European Army Group
CHPPM-EU	Center for Health Promotion and Preventive Medicine - Europe
CONUS	Contiguous United States
DAPam	Department of the Army Pamphlet
DCA	Directorate of Community Activities
DEH	Directorate of Engineering and Housing
DIN	*Deutsche Industrie Norm* (German Industry Standard)
DoD	Department of Defense
DoDDS	Department of Defense Dependent Schools
DOT	Directorate of Training
DPW	Directorate of Public Works
DRID	Department of Defense Reform Initiative Directive
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DSN	Defense System Network
DSV	*Deutscher Schädlingbekämpferverband* (German Pest Management Association)
DWTP	Domestic Wastewater Treatment Plant
EA	Environmental Awareness
EAC	Emergency Action Center
ECAR	The Environmental Compliance Assessment Report
ECAS	The Environmental Compliance Assessment System
EIS	Environmental Impact Statement
EMO	Environmental Management Office
EO	Executive Order
EQCC	Environmental Quality Control Committee
ERG	Environmental Review Guide

ERS	European Remote Sensing Satellite
ESRI	Environmental Systems Research Institute
ET&S	Engineering Technical Services
EUCOM	European Command
FAO	Federal Assets Office
FFH	Flora-Fauna-Habitat
FGS-G	Final Governing Standards, Germany
FORSCOM	Forces Command
FRG	Federal Republic of Germany
FY	Fiscal Year
GIS	Geographic Information System
GSW	German Specified Water
GUI	Graphic User Interface
HM	Hazardous Material
HQDA	Headquarters Department of the Army
HW	Hazardous Waste
HWSA	Hazardous Waste Storage Area
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
ISA	Interservice Agreement
ISR	Installation Status Report
ITAM	Integrated Training Area Management
LANDSAT TM	Land Remote Sensing Satellite Thematic Mapper
LCTA	Land Condition Trend Analysis
LfU	*Landesamt für Umweltschutz* (State Environmental Protection Agency)
LLTA	Lampertheim Local Training Area
LPflG	*Landespflegegesetz* (Land Conservation)
LRAM	Land Rehabilitation and Maintenance
LTA	Local Training Area
MACOM(s)	Major Army Command(s)
MACS	Multipurpose Arcade Combat Simulators
MAGIC	Military Activity GIS Interface Concept
MAI	Main Active Ingredient
MEDDAC	Medical Department Activity
MOM	Measures of Merit
MSL	Mean Sea Level
MWR	Moral, Welfare, and Recreation
NAF	Non-Appropriated Funds
NATO	North Atlantic Treaty Organization
NBC	Nuclear Biological Chamber
NEPA	National Environmental Policy Act
NVCS	National Vegetation Classification System
OCONUS	Outside Contiguous United States
ODCSENGR	Office of the Deputy Chief of Staff, Engineer
ODCSOPS	Office of the Deputy Chief of Staff for Operations and Plans

OEGBD	Overseas Environmental Baseline Guidance Document
OMA	Operations and Maintenance, Army
OPCON	Operational Control
OPRED	Operational Readiness
OPTEMPO	Operational Tempo
PAI	Pounds of Active Ingredient
PMR	Program Management Review
pnV	Potential Natural Vegetation
POC	Point of Contact
POW	Prisoner of War
PWSMP	Potable Water System Management Plan
PX	Post Exchange
QOL	Quality of Life
RADAR	Radio Detection and Ranging
RDB	Red Data Book
RPMA	Real Property Maintenance Activities
RSC	Regional Support Center
RSO	Reception, Staging and Onward Movement
RTLP	Range and Training Land Program
RTSC	Regional Training Support Center
SA	Supplementary Agreement
SAC(s)	Special Areas of Conservation
SDE	Spatial Database Engine
SDSFIE	Spatial Data Standard for Facilities, Infrastructure and Environment
SOFA	Status of Forces Agreement
SOP	Standard Operating Procedure
SOS	Schedule of Services
SPA	Special Protection Area
TAACOM	Theater Army Area Command
TES	Threatened and Endangered Species
TCT	Total Containment Trap
TG	Technichal Guide
TIM	Technical Information Manual
TM	Technical Manual
TRI	Training Requirements Integration
TrinkwV	*Trinkwasserverordnung* (Federal Drinking Water Standards)
TSD	Training Support Division
TSSDS	Tri-Services Spatial Data Standard
TÜV	*Technischer Überwachungsverein* (the principal non-profit monitoring and accreditation body in Germany)
USACERL	U.S. Army Construction Engineering Research Laboratory
USAEC	U.S. Army Environmental Center
USAREUR	U.S. Army Europe
UTM	Universal Transverse Mercator
VENC	High Visibility Environmental Compliance
VENN	High Visibility Environmental Conservation

VEPP	High Visibility Environmental Pollution Prevention
WHG	*Wasserhaushaltsgesetz* (Water Management Act)

GLOSSARY OF TERMS

ABG-75: "*Auftragsbautengrundsätze - 1975*" (Principles for Contracting Construction Projects - 1975) is an agreement between the Federal Republic of Germany and the financing bodies, to include the United States, on the procedures to be followed by the financing bodies to accomplish construction within Germany.

Adverse Effect: Changes that reduce the quality of the natural environment or diminish the quality or significant value of archaeological resources, cultural resources, or property.

Bannwald: Is a woodland which is protected for its important natural function/s such as acting a noise barrier, maintenance of the water catchment, and influence on the microclimate.

Biotopes: A small habitat characterized by its unique composition.

Biodiversity: As defined by Army Regulation 200-3, biodiversity is the variety of life and its processes, it includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Carrying Capacity (Ecological): The maximum density of wildlife which a particular area or habitat is capable of carrying on a sustained basis without deterioration of the habitat.

Carrying Capacity (ITAM): The amount of training that a given parcel of land can accommodate in a sustainable manner with a reasonable and prudent level of maintenance and rehabilitation. The optimum capacity is a balance of usage, condition, and level of maintenance.

Check Dams: Structures built on ephemeral stream beds, in order to control the flow of sedimentation into surface waters, often associated with retention basins.

Chlorination: The application of chlorine to water, wastewater, or industrial wastes, generally for the purpose of disinfection.

Climax vegetation: Stable end community of succession that is capable of self-perpetuating under prevailing environmental conditions.

Conservation: Wise management and use of natural resources to provide the best public benefits for present and future generations.

Contaminated water: Water that has been intruded by microorganisms, chemicals, wastes, or wastewater in a concentration that makes the water unfit for its intended use.

Edge Effect: The effect, generally favorable to wildlife, produced by the conditions existing where one habitat or cover type ends, and another one begins.

Ephemeral: Temporary or seasonal.

Endangered Species: Any species of flora or fauna, listed in Table 13-1 in the FGS-G, in a German state's Red List (Rote Liste Deutschland), or designated in some other fashion by the governments of the United States or Germany whose continued existence is, or is likely to be, threatened and is therefore subject to special protection from destruction or adverse modification of associated habitat.

Environment: The natural and physical environment, excluding social, economic, and other environments.

Fauna: Animals collectively.

Flora: Plant life collectively.

Forest Management: The science, art, and practice of managing and using for human benefit the natural resources that occur on or in association with forest lands.

Habitat: The place where a plant or animal species naturally lives and grows, or the environment in which the life needs of an organism, population, or biological community are supplied.

Herbicide: A chemical agent used to destroy or inhibit plant growth.

Improved Grounds: Acreage on which intensive maintenance activities are performed.

Integrated Pest Management: The use of all appropriate technology and management techniques to bring about pest prevention and suppression in a cost-effective and environmentally sound manner.

Inventory-Wildlife: Estimates of populations of wild animals, by species, on an area at a given time, based upon various types of procedures.

Management Plan: A document describing the quality of natural resources, their quantity, condition, and actions to ensure stewardship of natural resources.

Multiple Use: The integrated management of more than one land use to achieve the optimum use and enjoyment of natural resources while maintaining a balance of environmental qualities, ecological relationships, and aesthetic values.

Natural Resource: All living and inanimate materials supplied by nature that are of aesthetic, ecological, educational, historical, recreational, scientific, or other value.

Natural Resources Management: Action taken to protect, manipulate, alter, or manage environmental, human, and biological resources in harmony with each other to meet present and future human needs.

Outdoor Recreation Area: Land or water area with characteristics that make it suitable for one or more specific outdoor recreation activities. It does not, however, include athletic facilities such as ball fields and golf courses.

Outfall: The point or location where wastewater or drainage discharges from a sewer, drain or conduit.

Pest: Organisms (except for microorganisms that cause human or animal disease) that adversely affect the well being of humans or animals, attack Real Property, supplies, equipment or vegetation, or are otherwise undesirable.

Pesticide: Any substance or mixture of substances, including biological control agents, that may prevent, destroy, repel, or mitigate any pests; also any substance or mixture of substances used as plant regulators, defoliants, or desiccants.

pH: The acidity or alkalinity of a substance measured as a percentage of hydrogen ions formed in solution.

Potable water: Water that has been examined and treated to meet proper standards and declared by responsible authorities to be fit for drinking and domestic use.

Potential Natural Vegetation (pnV): is the vegetation that is expected to develop after the human influence on a particular area ceases. 'After' in some cases mean more hudreds rather than tens of years.

Retention Basin: Structures built to retain storm water and other surface run-off water, in order to control sedimentation, often associated with check dams.

Riparian: Along banks of rivers and streams.

Runoff: Water from rain, snowmelt, or irrigation that flows over the ground surface to a stream, lake, pond, or underground aquifer.

Sediment: Solid material, such as silt, sand, and organic matter, that moves from its site of origin and settles to the bottom of a watercourse or water body. Excessive amounts of sediment can clog a watercourse and interfere with navigation, fish migration, spawning, etc. If disturbed, sediment can be re-suspended in the water column, where it contributes to turbidity.

Semi-improved Grounds: Areas on which periodic recurring maintenance is performed, but to a lesser degree than improved grounds.

Sludge: The solids separated from liquids during processing or through deposition on bottom of streams and other bodies of water. A mixture of liquids and solids.

Surface Waters: Those waters continuously or occasionally flowing in beds, standing, or naturally flowing from springs.

State: The political subdivision referred to as *Land* in Germany.

Succession: Replacement of one ecological community by another; often progresses to a stable terminal community called climax.

Sustainable Use: Use of the land that meets the needs of the present generation without compromising those of future generations.

Syncline: A generally U-shaped fold or structure in stratified rock.

Threatened Species: Those plants and animals that are likely to become endangered within the foreseeable future throughout a significant portion of their ranges.

Throw: the vertical component of a dip separation measured in a vertical section at right angles to the fault surface.

Unimproved Grounds: Acreage occupied by land on which no maintenance activities occur.

Wastewater Treatment Plant (WWTP): Any DoD or host nation facility designed to treat wastewater before its discharge to waters of the host nation and in which the majority of such wastewater is made up of domestic sewage.

Watershed: The high ground (boundary) separating adjacent drainage where a 'drainage basin' is the region drained by a particular river or channel system.

Water Use: The removal or diversion of waters from surface waters: damming or lowering of surface waters; removal of solids from surface waters so that the condition of the water or its drainage is affected; introduction or discharge of substances into coastal waters; discharge of substances into the groundwater; removal, unearthing, drawing, and diverting or groundwater; damming, lowering, and conducting groundwater through facilities intended for these purposes; and measures that are likely to cause lasting or significant deleterious changes in the physical, chemical, or biological quality of the water.

Waters of The Host Nation: Surface waters including the territorial seas recognized under customary international law, including;

- all waters that are currently used, used in the past, or may be susceptible to use in commerce;
- waters that are or could be used for recreation or other purpose;

- waters from which fish or shellfish are or could be taken or sold;
- waters that are used or could be used for industrial purposes by industry;
- waters including lakes, rivers, streams (including intermittent streams) sloughs, prairie potholes, or natural pond;
- tributaries of waters identified above.

Waste treatment systems: including treatment ponds or lagoons, are not waters of the host nation. This exclusion only applies to human-made bodies of water that neither were originally waters of the host nation nor resulted from the impoundment of waters of the host nation.

Water Protection Area: An area established by a German state to protect public water supplies, supplement groundwater, or prevent harmful runoff of precipitation and flooding, as well as to prevent entry into the water of soil constituents or substances used to treat and fertilize plants. The state will publish a set of restrictions for each area designated apicable to all, including DoD components.

Wetlands: Areas inundated or saturated by surface water or groundwater at a frequency and a duration to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

EXECUTIVE SUMMARY

PURPOSE

The purpose of this plan is to document the policies and desired future direction of natural resources programs at 293rd BSB Mannheim**,** for the five-year planning period from 2003-2007**.** The plan was developed under the concepts of sustainable use of army lands, natural resources stewardship, biodiversity protection, and ecosystem management.

ENVIRONMENTAL COMPLIANCE

This plan has been written in accordance with the Environmental Final Governing Standards for Germany (DoD, January 2003).

SCOPE

Geographical scope

The major installations of the 5,640 acres (2,298 hectares) 293rd BSB Mannheim are located in *Northern Baden-Wuerttemberg,* Germany, a highly urbanized area in and around the city of Mannheim. The installations west of the River Rhine are located in the state of Rhineland-Palatinate, whereas the Lampertheim Training Area lies within the state of Hesse. The geology of the 293rd Mannheim is clearly dominated by sediments of the Quarternary period, mainly sand influenced layers from the late Pleistocene and the most prominent soils are of alluvial origin, including textures that range from sand to clay loam. Biotope mapping was carried out by the City of Mannheim for a number of installations that identified valuable habitats within the BSB. A Threatened and Endangered Species survey was completed for the Lampertheim Training Area and Coleman Barracks. Results are summarized in this plan.

Programmatic scope

For the purposes of this plan 293rd BSB Mannheim has been divided into two management areas, the cantonment area and the training area. Specific natural resources management programs have been detailed for these two areas separately.

RELATIONSHIP TO THE MILITARY MISSION

In order to fulfil its missions and maintain readiness standards, the United States Army must have lands that are capable of supporting training and other functions indefinitely into the future. Consequently, land and natural resources are some of the U.S. Army's most valuable assets. Sustainable use of these resources can be achieved through management programs that integrate training and other mission requirements for land use with sound natural resources management of the land.

The Mission of the 293rd BSB Mannheim is to provide command and control, and BASOPS support to the Mannheim Military Community. In addition, provide direct combat service/contingency support and RSO to its units located in or passing through the assigned area of responsibility, while shaping a capability to meet future requirements.

PARTNERSHIPS

For the implementation of this INRMP the significant partners with the installation will be the Environmental Office (EMO), the Operations and Maintenance Division, Training Support Division and the Hessian Landesforstamt**.** EMO cooperates closely with the State Nature Protection Agencies of Baden-Wuerttemberg and Rhineland-Palatinate.

PLANNED MAJOR INITIATIVES

Planned major initiatives within the timeframe of this plan include projects connected to the major constructions and renovations in various installations, in particular at Coleman Barracks. This constructions will be accompanied by various projects by the Landscaping section within the O&M Division (Vol II., Chapter 11.12) Major landscaping projects as well as tree planting is planned for the near future. Furthermore, major goals within the water management program include the completion of the utility system privatization, sewage system repairs at the installations within water protection zones and an extensive rainwater drainage feasibility study (Vol. II, Chapter 11.7.). The main goal for the Pest Management Program is to prepare an updated Integrated Pest Management Plan (IPMP) that complies with the new USAREUR Template. The Environmental Management Office plans to establish a FFH Management Program including the preparation of an FFH Management Plan.

Major initiatives within the Lampertheim Training Area include various erosion control projects, reseeding of the TCT Range floor and road repair activities. These projects were submitted as ITAM LRAM projects.

SUMMARY OF THE EFFECTS THE PLAN WILL HAVE ON THE INSTALLATION AND THE MISSION

The natural resource management programs detailed in this plan have been designed to preserve, protect, and enhance the environmental and ecological conditions of the 293rd BSB Mannheim. This will:

- Ensure that the U.S. Army has lands capable of supporting their mission indefinitely into the future;
- Limit negative impact on the 293rd BSB Mannheim and Federal Republic of Germany (FRG) community environments;
- Enhance host nation attitudes and cooperation;
- Provide desired quality of life for all permanently and temporarily assigned soldiers/personnel and family members, and;
- Provide the installation with economical natural resources management operations.

CHAPTER 1.0

INTRODUCTION

1.1 PURPOSE OF THE PLAN

This Integrated Natural Resources Management Plan (INRMP) has been prepared for the 293rd BSB Mannheim**,** Germany in accordance with the Environmental Final Governing Standards (FGS) for Germany, Chapter 13 - *Natural Resources and Endangered Species* (DoD, March 1996). The primary purpose of this INRMP is to document the policies and desired future direction of natural resources management programs at 293rd BSB Mannheim. Implementing the INRMP ensures sustainable use of lands for military training and other mission activities.

1.2 OVERALL GOALS

Overall goals of the plan include:

- Supporting the operational mission of 293rd BSB Mannheim**,**
- Meeting stewardship requirements; and
- Enhancing quality of life.

Specific goals for the natural resource management programs are listed detailed in the respective chapter of Volume II (Cantonment Area) and Volume III (Training Area) and in chapter 9 of Volume I (GIS goals).

1.3 MANAGEMENT PHILOSOPHY

This INRMP was developed under five main concepts:

- Sustainable use of military lands;
- Natural resources stewardship;
- Biodiversity protection;
- Ecosystem management; and
- Economic/cost savings aspects.

In order to achieve its missions and maintain readiness standards, the U.S. Army must have lands that are capable of supporting mission functions indefinitely into the future. Consequently, lands are one of the U.S. Army's most valuable assets. Sustainable use of these resources can be achieved through management programs that integrate training and other mission requirements for land use with sound natural resources management of the land.

Natural resources stewardship is the management of these resources with the goal of maintaining or increasing the resource's value indefinitely into the future. The stewardship goal of the U.S. Army is to manage all aspects of natural resources in such a way that multiple uses are compatible with each other. Multiple uses include, but are not limited to mission activities, outdoor recreation, aesthetic, forest management, and preservation.

Biodiversity is defined by U.S. Army Regulation 200-3 as the variety of life and its processes, including living organisms, the differences among them, and the communities and ecosystems in which they occur. Protecting and enhancing biodiversity is one overall goal of the U.S. Army. Biodiversity consists of many elements of the natural environment including indigenous ecological communities, native species and their associations, and ecosystem functions such as predation, grazing, nutrient cycling, and wild fire. Biodiversity is best measured by the variety of natural communities and the variety of natural functions that occur within and among these communities, rather than simply by the numbers of species

present. Management for maximum biodiversity helps to ensure ecosystem health, which in turn ensures sustainable use to accomplish military missions.

Ecosystem management is the tool that the U.S. Army uses to protect and enhance biodiversity and achieve sustainable use for military activities. This approach favors management that considers natural resources at a community or ecosystem level and de-emphasizes management at the single species level. The quality, integrity, and connectivity of the ecosystem is the overall goal in this approach, and it is assumed that within this broader scheme, individual species will prosper. This approach does not mean, however, that individual rare species are neglected. Rare species are important components of ecosystems and biodiversity. In addition, rare species are provided legal protection in many instances, and therefore must be considered in particular during project planning.

1.4 NATURAL RESOURCE DOCUMENTATION

For the preparation of this plan and the development of future initiatives, other relevant plans and documents designed to fulfill environmental requirements have been used as reference documents. These include the Installation Status Report (ISR), Environmental Compliance Assessment Report (ECAR), Environmental Program Requirements Report (EPR) and Environmental Review Guide (ERG). The above-mentioned documents are available at the 293rd BSB Mannheim Environmental Management Office (EMO).

Installation Status Report

The Installation Status Report is an internal survey that was developed to assess installation conditions and performance based on Army-wide standards. Data is provided annually from all Army installations. This data is then used to develop a three-part report consisting of Infrastructure, Environment and Services.

Environmental Compliance Assessment System/Report (ECAR/ECAS)

The Army's Environmental Compliance Assessment System is a Headquarters Department of the Army centrally funded program designed to conduct environmental compliance assessments for all Active Army, Army Reserve, and Army National Guard installations and

facilities. Environmental compliance assessments assist installation commanders in attaining, sustaining, and monitoring compliance with applicable federal, state, and Army Environmental regulations. There are two types of assessments, external and internal. External assessments are conducted on a three-year cycle by a team of independent assessors not associated with the installation. Internal assessments are conducted annually by installation staff. However, the annual Installation Status Report, Part II, Environmental, will fulfill the internal assessment requirement for installations that are required to file the report.

Environmental Project Requirements Report

The EPR report, along with the supporting database, is designed to fulfill the requirements of EO 12088 by identifying and documenting all project requirements and resources needed to execute the Army's Environmental Program. The EPR report is central to the effective programming and planning of resources needed for the Army's Environmental Program. The EPR report is used to assist in program development and budget formulation at all echelons.

Environmental Review Guide

The purpose of the ERG is to provide environmental guidance to USAREUR environmental coordinators and project planners during the earliest stages of project/activity planning. The ERG is a tool to allow USAREUR installations to comply with USAREUR Regulation 200-1, AR 200-2, DoD Directive 6050.7, EO 12114, and the FGS for projects or activities that occur within the jurisdiction of a foreign nation and that would be examined in an environmental document prepared unilaterally by the United States. The ERG assists planners in forecasting and mitigating potentially adverse environmental effects. It is designed as an "early warning system," identifying sensitive environmental issues in the earliest stages of all proposed projects/activities. This allows for mitigation of potential impacts prior to the initiation of projects and various activities. Without an environmental review, or in the case of an inadequate review, a project or activity may not be approved, the approval may be delayed, or a project/activity may be halted. A new edition of the ERG is currently being updated by USAREUR and will be released shortly.

1.5 INSTALLATION POLICIES

The principal installation policies established to attain natural resources management goals at 293rd BSB Mannheim include:

- To maintain sustainable use of Army lands through the conservation of existing resources;
- To enhance the quality of life for residents by incorporating the conservation of natural resources into the planning process;
- To protect surrounding land uses from potential impacts from the military mission through monitoring of the natural resources and rehabilitation of problem areas;
- To reduce operational costs by using sound natural resource management practices in the on-going maintenance of the facility; and
- To fulfill stewardship responsibilities through monitoring, protection, and enhancement of the existing natural resources.

Specific environmental protection policies include:

- Residents will place garbage in the large containers that are provided outside the quarters. Trash will not be left in hallways, stairwells, common-use areas, or placed on the ground next to the trash containers. Residents must ensure that no safety, health, or fire hazards exist.
- Residents must comply with the community Separate or Recycle Trash (SORT) Program.
- Family housing residents are responsible for the maintenance of the common-use areas within their assigned building and the maintenance of grounds, including the weeding and trimming of all shrubs and flower-planting areas, within 50 feet of their building or half the distance to the next family housing building, whichever is less. If the sponsor is absent from the community area (leave, TDY, field duty, deployment, etc.), the family members will be responsible for the maintenance of the common use areas.
- Residents are permitted to make only minor automotive repairs within the housing areas. This includes but is not limited to changing wipers, tires, and bulbs. Any drainage or replacing of fluids (e.g., motor oil, transmission fluids, anti-freeze) or any major repairs to the automotive power train system is prohibited within the housing area.

- Soaps or detergents that are not biodegradable are prohibited for washing vehicles in the housing areas, as this violates German environmental laws. Residents may use non-biodegradable detergents only at designated car wash facilities, either on Taylor or Sullivan Barracks, or at an off-post site.
- Pets will not be permitted to relieve themselves inside buildings, within 50 feet of buildings, within 50 feet of playgrounds, or in the immediate vicinity of walkways/roads. In all cases, pet droppings must be immediately removed and properly disposed.

- **ENERGY CONSERVATION:**
- Reduce air pollution caused by burning
- Avoid the hothouse/greenhouse effect by reducing CO2 emission
- Saving energy reduces dependence on natural resources

- **WATER:**
- Arrange proper repair of water leakages (call for service order).
- Do not use hot water if warm or cold water will suffice.
- Operate washer/dishwasher with a full load only.
- Do not pre-rinse dishes before putting them in the dishwasher (scrape-off food and empty liquids).

- **ELECTRICAL APPLIANCES:**
- Set refrigerators to save energy (Refrigerator 37 – 40º F).
- Make sure your refrigerator and freezer door seals are airtight (call for service order if needed).
- Replace paper wrappings with aluminum foil or plastic wrap, when storing food in the refrigerator.
- Check the dishwasher drains and filters to make sure they are not clogged.
- Turn-off PC monitor when unused.
- Turn-off PC and monitor at night.
- Use sleep mode instead of screen savers.

- Unplug electric appliances when not in use.
- Turn-off transformers when not required.

- **HEATING**
- Do not overheat; turn thermostat or radiator controls down to 68º F (20º C); middle setting.
- Use bath or kitchen ventilation fans only as needed.
- Keep doors closed in unheated rooms.
- Suggest shutting off radiators in corridors, vestibules and stairways.
- Raise shades, open curtains, and let the sun-warmed air inside.
- Check caulking around windows and doors to prevent air infiltration.
- Eliminate air infiltration; keep doors and windows closed.

Environmental policies for the Training Area are part of the 293rd BSB Local Training Area SOP (Annex H) and are currently under revision. Restrictions due to environmental reasons include:

- Refueling of vehicles is prohibited within the LTA,
- Drip pans are required for each stove and vehicle within the LTA.
- When digging foxholes or individual fighting positions, digging must not take place close to trees. No tree roots will be cut. All holes will be closed only with sand or dirt.
- Only dismounted training is authorized in the areas that are located within the water protection zone.
- Open fires are not permitted at any time in the LTA.
- The hunting of and tampering with wildlife in the LTA is prohibited.
- Wheeled vehicles will be driven with care in wooded areas to minimize damage.
- Trees and shrubs will not be needlessly damaged.
- Pyrotechnics and signs will not be nailed to trees or shrubs.
- Trees will not be cut down and live branches will not be cut away for any reason.
- Oil spills will be reported to Range Control and the soil removed.

The responsibility for implementation of these policies lies with the respective department or division, which provides Environmental Awareness Training. Standing Operation Procedures define the responsibilities and guidelines for compliance.

1.6 MONITORING PROGRESS

The INRMP will be reviewed annually and revised as necessary by DPW EMO personnel to attain U.S. Army stewardship goals. A major revision will be accomplished at least every 5 years. The initial plan will be signed by the BSB Commander and, through official channels, sent to USAREUR for approval. Only the initial plan and major revisions will be forwarded to USAREUR for approval (Department of the Army, 25 February 1995).

1.7 ORGANIZATION OF THE PLAN

This INRMP is organized into three volumes that are further divided into a total of 15 chapters. Volume I includes general information that is applicable to the cantonment area and training area. Volumes II and III address specific management programs for the cantonment area and training area, respectively. The tables, figures, and photographs are numbered according to the Section in which they first appear. For example, if this Section had a table the number would be 1.7.1. References are listed in Appendix A1. Persons Contacted are listed in Appendix B1. Each volume has separate appendices and is intended to be a stand-alone document.

The natural resource management programs for the installation have identified management goals designed to address management issues and concerns. The Project/Program Priorities section of each program is defined as Highest Priority, Important, or Less Important. The following definitions are according to the Draft Guidelines for Preparing Integrated Natural Resources Management Plans (USAEC, 1997).

- The projects that have been classified as Highest Priority are those which are needed in order to be in compliance with environmental regulations.

- Those projects that have been classified as Important are those that will directly benefit the military mission or which will significantly improve the quality of life at the installation.
- Those projects classified as Less Important are those which would first be cut or will only be implemented if funding is available.

1.8 POINTS OF CONTACT

Natural resources management point of contact (POC) information for the installation and German agencies is presented in Table 1.8.1 and 1.8.2.

TABLE 1.8.1

293rd BSB MANNHEIM NATURAL RESOURCE MANAGEMENT PLAN

POINTS OF CONTACT

Program	Location	Responsible Department	Primary Point of Contact			
			Title	Name	Building Number	Telephone Number (DSN)
USAREUR ITAM Program Manager	Grafenwöhr	7th ATC	ITAM Program Director	Mr. Whelan	621	475-6902
ITAM Program	Mannheim	RTSC Mannheim	ITAM Coordinator	Mr. Wemhoff		373-7907
Lampertheim Training Range Manager -LCTA -LRAM -TRI -EA	Mannheim	7th ATC	Chief/Training Support Range Manager	Mr. Cruz Mr. Agee	50	382-5107
Forest Management	Mannheim	DPW – O&M	Superv. Landscape Architect	Mr. Meinzer	346	381-7009
	Heidelberg	IMA-EURO	Command Forester	Mr. Grimm	3796	370-6799
Fish & Wildlife Management						
- Fish	N/A	N/A	N/A	N/A	N/A	N/A
- Wildlife	N/A	N/A	N/A	N/A	N/A	N/A
Rare, Threatened and Endangered Species Management	Mannheim	DPW - EMO	Environmental Specialist	Mr. Weinerth	346	381-7007
Wetlands Management	N/A					

TABLE 1.8.1 (CONT.)

Program	Location	Responsible Department	Primary Point of Contact			
			Title	Name	Building Number	Telephone Number (DSN)
Solid Waste Management/SORT Coordinator	Mannheim	DPW - EMO	Environmental Specialist	Mr. Ziegler	346	381-7029
Water Resources Management - Water Resources Quality - Water Supply/Wastewater Treatment	Mannheim Mannheim Mannheim	DPW – O&M DPW – O&M/EMO DPW – O&M	C/O&M Environmental Specialist Civil Engineer	Mr. Marx Mr. Schork Mr. Menz	346 346 346	381-8927 381-7035 381-7009
Agricultural and Grazing Outleasing	N/A					
Pest Management Fire Management	Mannheim Mannheim	DPW – O&M Fire and Emergency Services	Entomologist Fire & Emerg. Svcs.	Mr. Fluhrer Mr. Ott	313B 21	381-7456 381-4690
Outdoor Recreation	Mannheim	Outdoor Recreation		Mr. Leigh	375	381-7215
Cultural Resources	Mannheim	DPW – EMO	Environmental Specialist	Mr. Weinerth	346	381-7007
Grounds Maintenance and Vegetation Management	Mannheim Heidelberg	DPW – O&M IMA-EURO Env.	Civil Engineer Command Management Agronomist	Mr. Meinzer Mr. Elyn	346 3796	381-7009 370-7699

TABLE 1.8.2

GERMAN AGENCY POINTS OF CONTACT

Training area (Hesse)

Program Name	Responsible Agency	Primary Point of Contact		
		Title	Name	Telephone Number
Forest Management*	Forestry Lampertheim	Oberförster	Mr. Schepp	06206-94520
Fish and Wildlife Management	Forestry Lampertheim	Oberförster	Mr. Schepp	
TES Management	Forestry Lampertheim	Oberförster	Mr. Schepp	
Agricultural and Outleasing Program	N/A			

Cantonment area (Baden-Württemberg, Rheinland-Pfalz)

Program Name	Responsible Agency	Primary Point of Contact		
		Title	Name	Telephone Number
Forest Management*	Bundesforstamt Bad Kreuznach	Oberförster	Mr. Rodach	06345-919264
Fish and Wildlife Management	Bundesforstamt Bad Kreuznach	Oberförster	Mr. Rodach	06345-919264
TES Management	City Mannheim	Sachbearbeiter Naturschutz	Mr. Schneider	0621-293-7440
Agricultural and Outleasing Program	N/A			
Water Management Program Grounds Maintenance	Staatliches Hochbauamt Heidelberg	Sachbearbeiter Wasser und Grünflächenplanung	Mr. Schley	06221-530336

* The points of contact for each of the Forest Districts are listed in Volume III, Section 14.3.1

CHAPTER 2.0

LOCATION AND ACREAGE

2.1 LOCATION AND LAND OWNERSHIP

The 293rd BSB Mannheim consists of 17 locations including: Benjamin Franklin Village, Coleman Barracks, Dannenfels Communication Station, Edigheim Beacon Site, Friedrichsfeld QM Services, Friedrichsfeld Store Area, Funari Barracks, Grünstadt AAFES Fac, Grünstadt Communication Station, Lampertheim Training Area, Mannheim Class III Point, Spinelli Barracks, Sullivan Barracks, Taylor Barracks, Turley Barracks and Worms Auto Strip Yard. The location of these 17 sites is shown in Figure 2.1.1. Several of these locations are sub-divided into separate parcels of land according to ownership and the date the property was acquired. Each parcel of land usually has a unique obligation document number. It should be noted that the separate parcels of land associated with each location are not necessarily contiguous. Key points obtained from the Real Property records are provided in Tables 2.1.1 and 2.1.2.**]**

The Federal Republic of Germany (FRG) allows the U.S. Army to use federal land as a military installation under the administration of the 293rd BSB Mannheim to fulfill their defense responsibilities within the North Atlantic Treaty Organization (NATO). The Supplementary Agreement (SA) to the NATO Status of Forces Agreement (SOFA) delineates the scope of U.S. authority within the installation boundaries. In brief, this authority entitles the U.S. forces to take the measures necessary to satisfactorily meet their defense responsibilities. The United States Army Europe (USAREUR) has an obligation to act responsibly and effectively in the management and use of natural resources and lands under its administrative control.

TABLE 2.1.1

CANTONMENT AREAS

Locations	ARLOC	Obligation Document No.	Comments	Ownership
Benjamin Franklin Village	GE07P	CAC-F-5226, 5227, 5228, 5229	DODDS, AAFES, Family Housing	FRG
		CAC-F-5233, 5224, 5235, 5237-5243		FRG
		CAC-F-5248 – 5253, 5255 – 5259, 5262 – 5268, 5270 - 5277		FRG
		CAC-F-5303, 5312, 5313, 5331, 5332, 5406, 5406		FRG
Coleman Bks.	GE140	ACA-K-4244	Confinement Fac., 2/502nd Aviation, Kasernes	FRG
		CAC-F-5382, 5383		FRG
		EC-F-1983		City of Mannheim
		6GRE 41962		FFRG
		6GRE 100742		City of Mannheim
Dannenfels Comm. Sta.	GE15F	ACA-K-4275	Communication Station 5th Signal	FRG
		6GRE 82871		Rheinland Pfalz
Edigheim Beacon Site	GE 190	ACA-K-4245	Switching Station	FRG
Friedrichsfeld QM Services	GE27S	ACA-F-5034	Industrial Service Center, Furniture	FRG
		EC-F-1445		City of Mannheim
		EC-F-2256		City of Mannheim
Friedrichsfeld Store Area	GE27T	CAC-F-5033	Distribution Point	FRG
Funari Bks.	GE28T	CAC-F-5308	5th Signal Command, Scouts, Teen Center, Caserne	FRG
Grünstadt AAFES	GE32H	ACA-K-4081, 4083, 4225,	AAFES Bakery, Chlorination Station, Depots	FRG
		6GRE 105178		FRG
Grünstadt Comm. Sta.	GE32F	6GRE 80985	Pumphouse	FRG
Mannheim Class III Point	GE52F	CAC-F-5392	5th Signal, Col.Conf.Stor.Fac.	City of Mannheim
		REA-K-4731		FRG

Locations	ARLOC	Obligation Document No.	Comments	Ownership
		6GRE 71929		FRG
Spinelli Bks.	GE79R	ACA-K-4254	Transportation, Storage	FRG
		CAC-F-5376		FRG
		EC-F-1968		Deutsche Bahn AG
		6GRE 71881		FRG
		NAC-1064		City of Mannheim
		NAC 608, 609, 623, 624, 643,		Private Owner
		NAC 825		City of Mannheim
		NAC 954, 956, 957, 958, 962, 982		Private Owner
		NAC 985		FRG
		NAC-1024		Private Owner
Sullivan Bks.	GE82J	CAC-F-5309	BSB HQ, MTOE, USO, Housing	FRG
		6GRE 76109		FRG
		6GRE 41888		FRG
Taylor Bks	GE83C	CAC-F-5378	DPW, Provost Marshal, MAM	FRG
Turley Bks.	GE856	CAC-F-5378, 5311	Claims, University of Maryland	FRG
Worms Auto Strip Yard	GE822	ACA-K-4102	Strip Yard, Craft Shop	FRG

TABLE 2.1.2

TRAINING AREA

Locations	ARLOC	Obligation Document No.	Comments	Ownership
Lampertheim Training Area	GE478	6GRE 27544	Training ranges, open areas	State of Hesse
		6GRE 49203		

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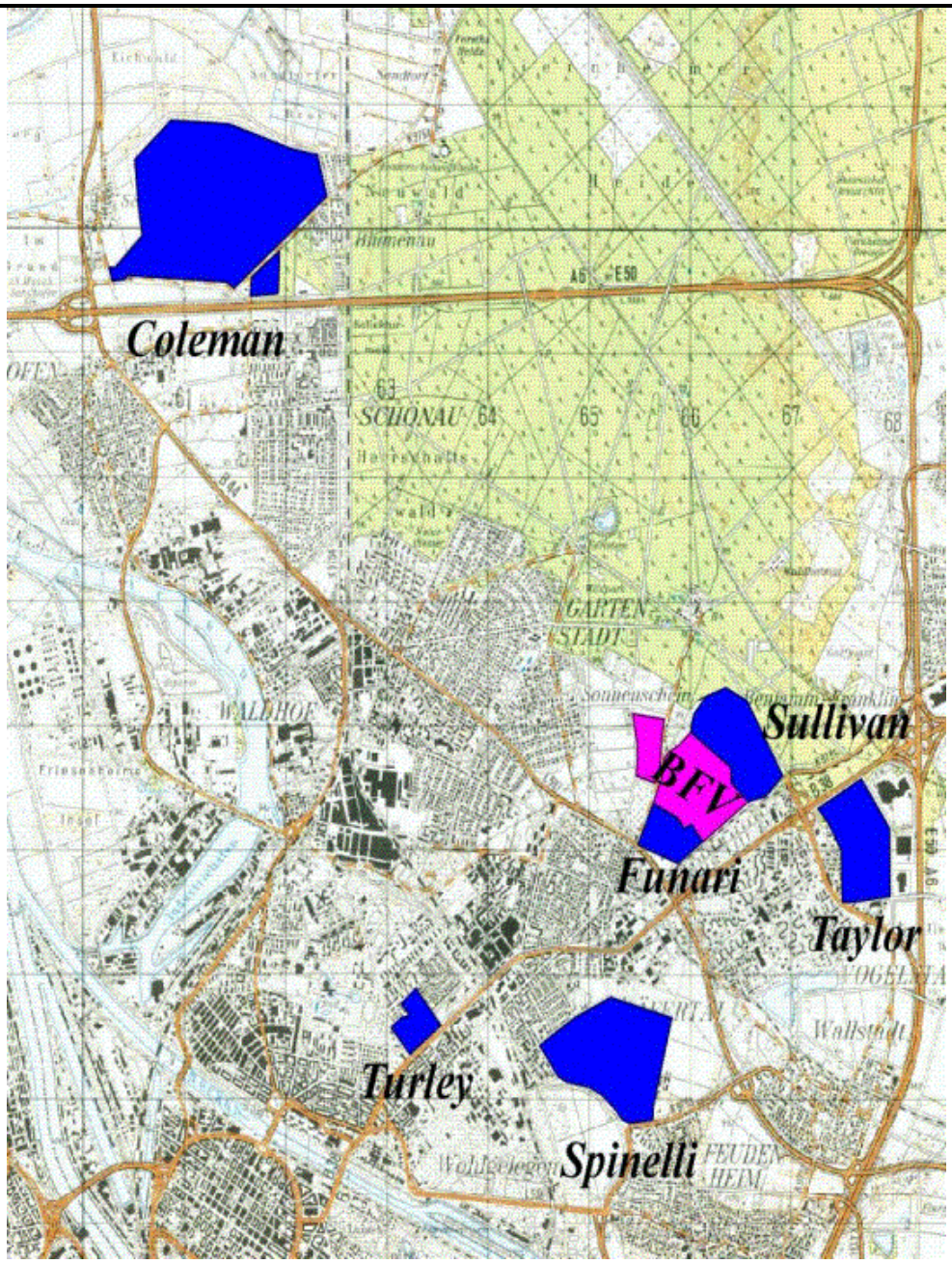
FIGURE 2.1.1

LOCATION OF MAJOR INSTALLATIONS WITHIN THE CITY LIMITS OF MANNHEIM



Source: 293rd BSB DPW Installation Branch

Please click here for an overview map showing all installations of the 293rd BSB Mannheim

2.2 ACREAGE AND ACQUISITION

The present total acreage of the installation is 5,574 acres or 2270,5 hectares based on data provided by USAREUR and Real Property. Installation lands are divided into the cantonment areas, which include 1,487 acres or 605,5 hectares and the training area, which consists of 4,087 acres or 1,665 hectares. Tables 2.2.1 and 2.2.2 provide a summation of the sizes of the land included within the 293rd BSB Mannheim.

TABLE 2.2.1

SIZE OF THE CANTONMENT AREAS

Locations	Acres	Hectares
Benjamin Franklin Village	231	94
Coleman Bks.	580	236
Dannenfels Comm. Sta.	4	1.6
Edigheim Beacon Site	1	0.4
Friedrichsfeld QM Services	39	16
Friedrichsfeld Store Area	16	6.5
Funari Bks.	31	12.5
Grünstadt AAFES	20	8
Grünstadt Comm. Sta.	64	26
Mannheim Class III Point	44	18
Spinelli Bks.	200	81.5
Sullivan Bks.	108	44
Taylor Bks	114	46.5
Turley Bks.	33	13.5
Worms Auto Strip Yard	2	0.8
Total Cantonment Areas	1,487	605,5

TABLE 2.2.2

SIZE OF THE TRAINING AREAS

Locations	Acres	Hectares
Lampertheim Training Area	4,087	1,665
Total Training Areas	***4,087***	***1,665***

2.3 INSTALLATION HISTORY

The Mannheim Military Community has its roots with the American occupational forces immediately after World War II. The 1st support Brigade was activated in June 1965 at Taylor Barracks, Mannheim. When the 7th Army Support Command was dissolved in 1970, the Brigade became a major subordinate headquarters under the Theater Army Support Command, Europe (TASCOM). When TASCOM merged with U.S. Army Europe headquarters in 1974, the U.S. Military Community Activity-Mannheim evolved. Until 1991, USMCA-Mannheim was the single point of control for all American soldiers, civilians, and family members, providing base operations support for tenant units in its assigned area.
In 1990, Mannheim Military Community's area of responsibility was considerably extended by the consolidation of the Worms Community Activity, including the sub-community of Weierhof. The area of operation grew to the current BASOPS area of over 938 square miles.
On 1 October 1991, the Mannheim Military Community Activity was re-designated as the 293rd Base Support Battalion, under the 26th Area Support Group based in Heidelberg. Until then, the USAREUR Provost Marshal had been the Community Commander commanding nearly 1,400 soldiers and civilians. The change in command on 7 August 1994 marked a new era (within) for the first Headquarters; Department of the Army Battalion Command selected Lieutenant Colonel to assume command. The Commander, 5th Signal Command is now the Senior Tactical Commander for the Community and performs duties similar to a Lord Mayor – monitoring of and advising on quality of life issues and promoting German – American relations. The mission of the 293rd Base Support Battalion is to provide support and serve as a power projection platform for tenant and transient units.

Sullivan Barracks was originally constructed between 1936 and 1938 to house an officer candidate school for the German Air Force. After WWII, it served as a POW camp until 1947, when it was converted to station U.S. military forces.

Originally constructed for the German Army in 1937, Funari Barracks was acquired by U.S. forces in 1945. War damage was repaired and the installation converted for use as a troop Kaserne with an administrative office complex and miscellaneous community-wide support facilities. In 1996, Funari became the new home of 5th Signal Command.

Following the acquisition of Funari Barracks and Sullivan Barracks in 1947, Benjamin Franklin Village was constructed in two phases between 1951 and 1956 to house dependents and provide central community support facilities.

Taylor Barracks was originally built in 1939-1940 to house German Army searchlight teams. It was acquired by U.S. forces in 1945.

Spinelli Barracks was constructed in 1938 for a German Army horse-drawn combat engineer battalion. It was acquired by U.S. forces in 1945 and enlarged for use as an ordnance depot. Later it was modernized and developed as a storage and supply center.

Coleman Barracks was originally constructed in 1938-1939 as an airfield for the German armed forces. Acquired in 1945, the U.S. Army retained its use as an airfield and built new troop billets, operational areas and a confinement facility.

Originally named "Infanteriekaserne," Turley Barracks was built between 1899 and 1901 as a replacement for military buildings in downtown Mannheim. Also known as "Kaiser-Wilhelm Kaserne", the installation was constructed of distinctive red sandstone blocks in New Renaissance style around a central parade ground. The original Kaserne contained barracks, officers' mess, dependent housing, a warehouse and utility buildings. The installation was used by the German Army in WW I, deactivated after the war and then reopened in 1936 to train German Army troops for WW II. It was acquired by U.S. forces after WW II and renamed. In 1948, it was converted for use by transportation and labor service units. Due to stately historic buildings and importance as an example of military architecture, Turley Barracks was placed on the list of historical monuments in Baden-Württemberg in the 1980s. The exteriors of the 12 historic structures facing the B38 and the parade ground have been restored at considerable cost and are now subject to historic protection measures under German law.

Friedrichsfeld QM Service Center and Friedrichsfeld Storage Area were constructed around 1937 to house a German labor camp. They were acquired by the U.S. forces after WW II.

Lampertheim Training Area was exposed to intense wood use during the Middle Age, due to the area's proximity to different settlements. Moreover, geese were herded and horses, sheep, swine and neat were grazed in the pastures. For the inhabitants, the forest was available for wood gathering and litter.

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2.4 ADJACENT LAND USES

Mannheim is located in the Rhine-Neckar triangle, an urbanized agglomeration comprising the cities of Heidelberg, Mannheim and Ludwigshafen, with approximately 2.3 million inhabitants. The land in this area is mainly used for industrial, traffic and residential purposes. Industry in Mannheim includes companies such as ABB, John Deere, Daimler Chrysler and the Grosskraftwerk GKM (Power Plant). Although the area is characterized by industry, recreational areas and parks are found within this agglomeration.

The three neighboring installations Funari, Benjamin Franklin Village and Sullivan Barracks adjoin the Käfertal Nature Preserve (Photograph 2.4.1), a large forested area, to the north, and agricultural land to the northwest. The south/southeastern border is formed by train tracks and two main roads. The southwestern border of Funari is formed by a main road and adjoining gardens (Photograph 2.4.4).

Taylor Barracks is located within an industrial park that is bordered by a triangle of three major roads, the A 6 Autobahn to the east, the Bundesstrasse B38 to the north and the Magdeburger Strasse to the west.

Spinelli Barracks is surrounded by parks, agricultural and fallow land to the northeast and southwest, whereas residential areas border on the south and northwest (Photograph 2.4.2).

The south and east of Coleman barracks are bordered by two Autobahns. The forest, which is divided by these highways, however, extends further south, east and north. In the west, the small community of Scharhof, surrounded by agricultural land, adjoins the installation. Asparagus is one of the main crops in the area. There is also a small industrial area west of Coleman.

Friedrichsfeld QM Service Center and Friedrichsfeld Storage Area are located between Mannheim and Heidelberg, south of highway A 656. They mainly border on industrial areas, train tracks in the south and a small forested area west of Friedrichsfeld Storage Area.

A detailed description of the regional settings of the individual installations is found in Chapter 5.

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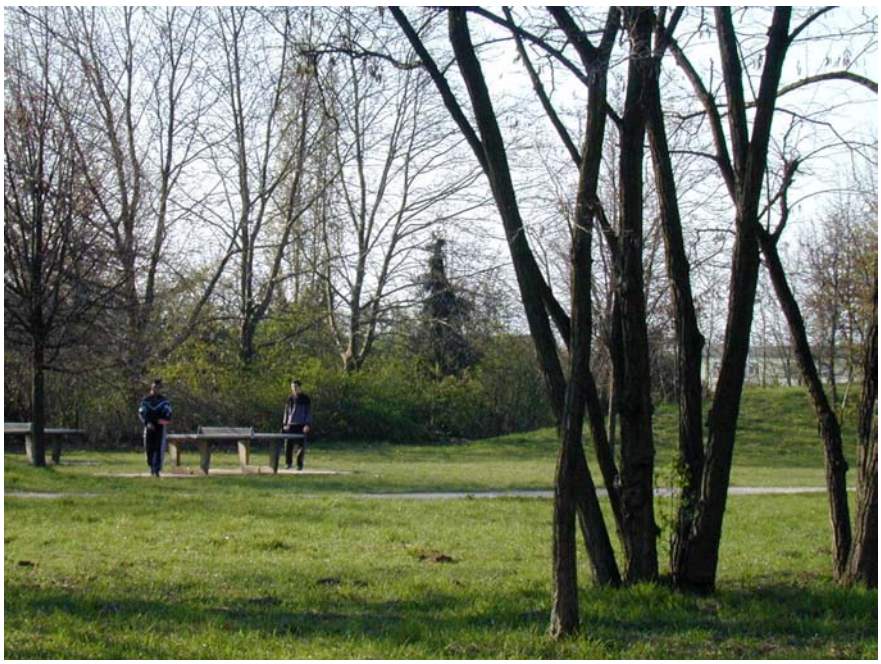
Photograph 2.4.1 Nature preserve area Käfertal, north of Sullivan Barracks.

Photograph 2.4.2 Residential areas and fallow land adjacent to Spinelli Barracks.



Photograph 2.4.3 "Bürgerpark" with recreation facilities west of Spinelli Barracks.

Photograph 2.4.4 Gardens southwest of Funari Barracks.

CHAPTER 3.0

MILITARY MISSION

3.1 OVERVIEW

The 293rd BSB Mannheim is part of US Army Europe/7th Army (USAREUR/7A) and the 26th Area Support Group (ASG). The mission of the installation is to provide command and control, and BASOPS support to the Mannheim Military Community. In addition, provide direct combat service/contingency support and RSO to its units located in or passing through the assigned area of responsibility, while shaping a capability to meet future requirements.

The Mannheim 293rd BSB mission goals include the following:

- Provide Base Operations (BASOPS) and Combat Service Support to the total force;
- Provide command and control for force protection;
- Maintain and improve power projection platform capability for all tenant units;
- Ensure members of the community are receiving consistent, excellent service;
- Constantly improve quality of life programs and instill a sense of community pride;
- Provide positive environmental stewardship;
- Build a competent, flexible work force that maximizes efficiency and minimizes costs.

3.2 NATURAL RESOURCES NEEDED TO SUPPORT THE MILITARY MISSION

The primary natural resource needed for the military mission is an area of uninhabited open land that provides realistic training conditions. The soils and vegetation need to be robust enough to withstand military training, while topography and water resources must be varied enough to test the equipment and vehicles. The landscape needs to represent conditions that soldiers are likely to encounter in a real battle situation in order to facilitate realistic and effective training.

The following consequences could occur if natural resources that are needed to support the mission are left unmanaged:

- Degradation to quality of life standards;
- Loss of training acreage at Lampertheim Training Area;
- Creation of safety hazards;
- Decreased tactical maneuverability;
- Increased maintenance costs to training units; and
- Loss of vegetation and wildlife, undermining Host Nation support of U.S. military presence.

3.3 EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES

The military mission of 293rd BSB Mannheim has a variety of effects on natural resources. After a long period of extensive military use until the early nineties, the military mission of the 293rd BSB has changed. Land damages resulting from tank training are relics from this past period. Today, the main training activities in the Lampertheim Training Area include bivouacking, communication training and land navigation. The area comprises a total of ten designated bivouac areas where various units practice camp and vehicle camouflage. These areas lie within forested areas and are therefore sensitive of heavy use. Some of the bivouac sites are covered by dense forests, that form a natural limitation to vehicle entrance. These areas lie within forested areas and are therefore sensitive to heavy use. Some of the bivouac

Photograph 3.3.1 Bivouac Area without natural understory

sites are covered by dense forests that form a natural limitation to vehicle entrance. Recurring units, however, have an impact on the natural resources by preventing a natural understory to develop. The grass layer can easily regenerate during the unused periods, but a layer of tree

re-growth and shrubs is missing in some of the bivouac areas. (Photograph 3.3.1).

The use of tracked vehicles is restricted in the Lampertheim training area. No tanks are used and only a small number of tracked vehicles is operated on the existing trails. Especially under rainy weather conditions, repeated use of heavy vehicles can cause grooves in the earth and increased erosion.

Photograph 3.3.2 Tracked vehicle use is limited to roads and trails

Negative impact on the soil caused by lead ammunition was eliminated recently. Soil from the old shooting range, which was located within the water protection zone, was removed and the range was moved outside the water protection zone. The new range is a Total Containment Trap Range (TCT Range) that allows the system to catch all bullets and direct them into sealed containers where they are stored and finally disposed.

A small part of the Lampertheim Training Area is used by John Deere. This company, that is located in Mannheim, carries out tractor testing on a field near the LTA main entrance. In this

area, bare soil is exposed to heavy tractor operation which may cause increased surface water runoff and the formation of trenches (Photograph 3.3.3).

Photograph 3.3.3 John Deere Test Area

3.4 IMPACTS OF NATURAL RESOURCES ON THE MISSION

Natural resources have the potential to affect the mission at 293rd BSB Mannheim primarily by limiting areas that are suitable for training. Forested areas are under management of the Bundesforstamt and tracked vehicle training is generally restricted within these areas. Training is also limited in other environmentally sensitive areas. Some of these areas, such as sand dunes contain rare species and are therefore off-limits.

Much of the BSB is located within water protection zones for the city of Mannheim (Figure 3.4.1). This is a very delicate issue with the host nation. Some major changes have already taken place in the LTA due to the location within a water protection zone. The Shooting range has been moved and the Hand Grenade Practice Area has ceased operations. The military mission cannot be completely fulfilled because of the LTA's location in a water protection zone. Training of the Maintenance Battalion, for example, includes the maintenance and repair of motors as well as refueling under field conditions, which cannot be performed under the prevailing conditions.

Other minor restrictions due to natural resources include limited use of pyrotechnics because of noise problems and restricted orientation and restricted vehicle maneuverability caused by dense forests.

3.5 MISSION CHANGES AND FUTURE MISSION IMPACTS ON NATURAL RESOURCES

No major mission-related changes that may impact natural resources are currently planned. Changes within the individual installations are described in the 293rd BSB's Master Plan and are briefly described in Chapter 4.

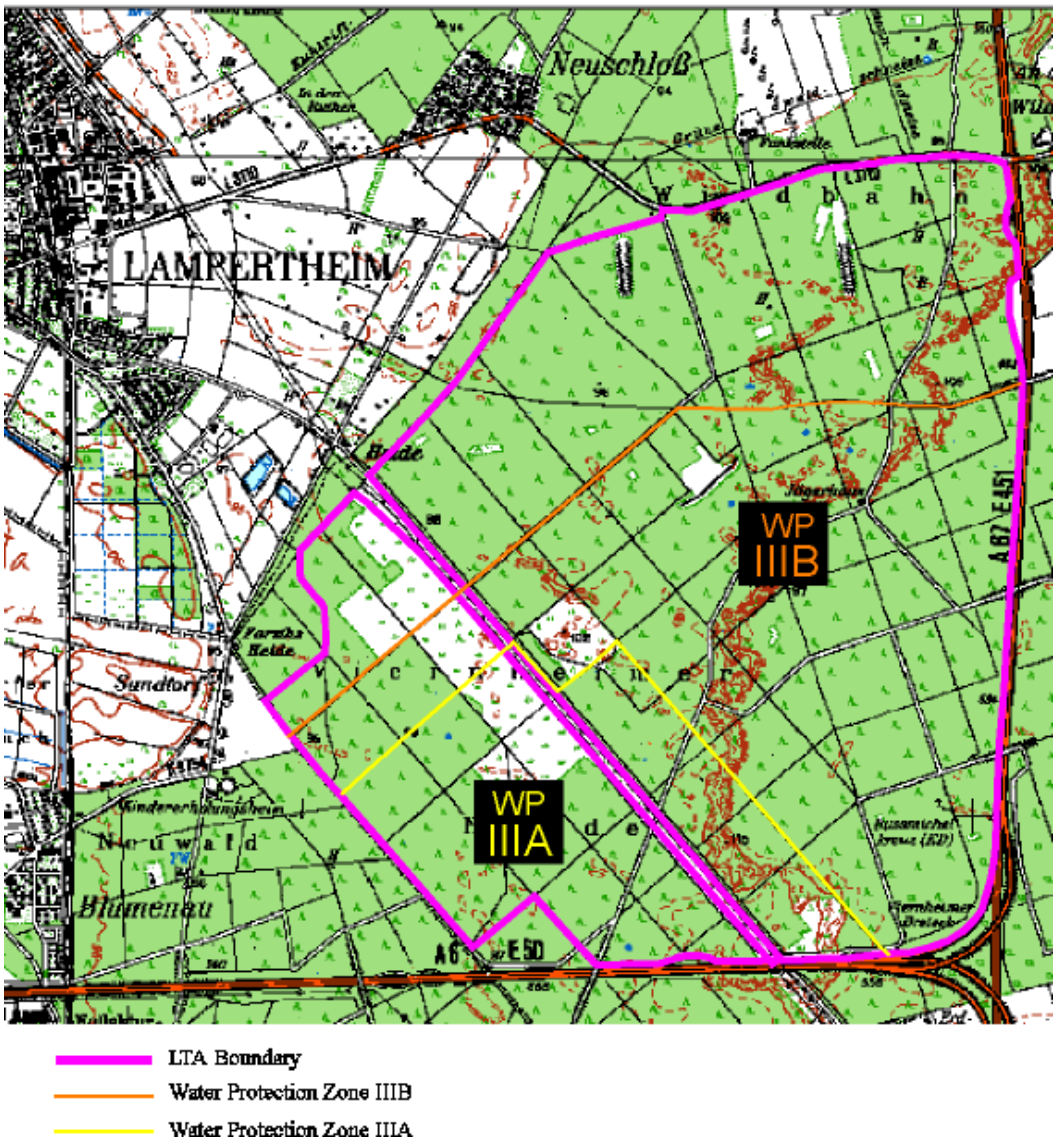


Fig. 3.4.1 Impact of Natural Resources on the Military Mission: Boundaries of Water Protection Zones

CHAPTER 4.0

FACILITIES

4.1 OVERVIEW

The present total acreage of the installation is 5,574 acres (2,270.5 hectares) based on data provided by USAREUR and Real Property. Installation lands are divided into cantonment areas and training areas as described in Chapter 2.2.

The cantonment areas provide a range of facilities including: administrative, housing, ware-house, maintenance, and quality of life/community support facilities. Examples are listed in 4.2.

The training areas provide numerous facilities including: a TCT Range, an M 203 Range, an NBC chamber, a confidence course, signal sites, and weaponeers.

The permanent population of the installation, according to the installation internet homepage (as of Oct. 2000), is approximately 15,000 including: 4,631 Military, 800 GS Civilians, 193 DODDS, 317 NAF, 276 AAFES, 6,020 Family members, 1,487 civilian family members 1,600 active duty, 2,200 military family members, 400 U.S. civilians, 555 contractors, 275 retirees, 774 local nationals and CSG.

4.2 FACILITIES AND TRANSPORTATION SYSTEM

Table 4.2.1 summarizes the types of facilities and the transportation systems provided at each location. All major installations possess paved road systems and a bus system operates between the main kasernes.

TABLE 4.2.1

FACILITIES AND TRANSPORTATION SYSTEMS

Locations	Facilities and Transportation Systems
	Cantonment Areas
Benjamin Franklin Village	This location serves as the community center for Mannheim, providing family housing and community support facilities. The installation contains DODDS schools, the PX and other AAFES activities, youth services and child development centers, a large outdoor sports complex, the medical/dental clinic, the 510th Postal Company and the Top Hat Club. BFV is the primary family housing area for the 293rd BSB with over 1900 units and the capacity for 5400 residents. The installation is divided by a major rail corridor and public streets.
Coleman Bks.	Coleman contains the 18th MP Brigade HQ, the 28th Transportation Battalion, 2/502nd Aviation Regiment, 414th Signal Company, 11th Signal Detachment, 6981 CSG, HQ Company AMFL, MCT-Mannheim, ACE Mobile Force Land HQ, and several other smaller units. Coleman also provides extensive aircraft and organizational vehicle maintenance and parking, troop housing and administration, and community support facilities. The confinement facility is also located at Coleman.
Dannenfels Comm. Sta.	Communication station 5th Signal
Edigheim Beacon Site	Communication station
Friedrichsfeld QM Services	This location includes industrial facilities, housing, a large DRMO (scheduled for deactivation), several 26th ASG and AAFES warehouse activities, an AMC communications and electronics equipment fielding team and a NATO site.
Friedrichsfeld Store Area	
Funari Bks.	This location includes the 5th Signal Commands Headquarters. It also contains facilities for Boy Scouts and Girl Scouts, a Teen Center, 2nd Signal Brigade School and MCSC/CDOIM
Grünstadt AAFES	AAFES bakery
Grünstadt Comm. Sta.	Communication Station
Mannheim Class III Point	Hazardous material processing facility

Locations	Facilities and Transportation Systems
	Cantonment Areas
Spinelli Bks.	Spinelli Barracks is an industrial storage and supply center. The 51st Maintenance Battalion is stationed here, as are the 720th Ordnance (EOD), 510th Postal, 208th Finance Battalion, and the US National Support element (USAREUR). The location has a small barracks and administration area, maintenance, and extensive storage facilities. Spinelli is served by a rail spur.
Sullivan Bks.	This location provides administration, troop housing, community services and organizational vehicle maintenance and parking. It includes BSB Headquarters as well as MTOE organizations (7th Signal Brigade, 44th Signal Battalion, 4th ASOS (USAF) and the 510th Personal Service Battalion). Community facilities include the security police, new commissary, community bank, ACS, housing office, USO, library, a gymnasium and the Provisions Restaurant.
Taylor Bks.	This location provides administrative, maintenance and community support facilities. It houses the DPW, the USAREUR Provost Marshal Office, 2nd Signal Brigade HQ, Southern Law Center and USAREUR Vehicle Registration
Turley Bks.	This location houses the 181st Transportation Battalion, USAREUR Claims, and the University of Maryland in Europe. It also contains troop housing, administration, maintenance facilities and a full complement of University including housing.
Worms Auto Strip Yard	Strip Yard
	Training Area
Lampertheim Training Area	This location provides training facilities such as Shooting Ranges and an NBC chamber. Most of the area consists of forested land. There is a network of gravel and dirt roads. Four designated landing zones allow helicopter access.

4.3 WATER SUPPLY AND WASTEWATER TREATMENT

All Mannheim Installations are served by water supplied by local utility providers. The German water supply is not adequately chlorinated for U.S. standards, and supplemental chlorine and fluoride treatment is provided by DPW. However, the ECAR (2002) found fluoride levels above the maximum contamination level. The BSB reports that an adequate disinfection residual is not maintained because this is corrosive to the distribution pipes.

The network of water distribution pipes and sewer lines at all installations is generally in a poor condition. A study is currently underway to investigate the condition of the sewer system within the water protection zone. Even though wastewater management is the responsibility of the O&M Division, this study (Liegenschaftsbezogenes Abwasserkonzept LAK) was funded and initialized by EMO, in cooperation with the Federal Building Authorities (Staatsbauamt). Plans to privatize the sewer system do exist but decisions have not yet been made.

The quantity of water consumed within a given period varies depending on the season, total number of vehicles washed, the number of construction projects, and the number of people located at each site. The total volume of water used during FY 2001 was approximately 1.27 million m^3 (O&M Division).

TABLE 4.3.1

WATER SUPPLIERS AND QUANTITIES USED (FY 2001)

Location	Water Supplier	Volume Used 2001 (m^3)
Benjamin Franklin Village	City of Mannheim MVV	583,447
Coleman Barracks	City of Mannheim MVV	264,761
Friedrichsfeld QM Service Center	City of Mannheim MVV	7,043
Friedrichsfeld Store Area	City of Mannheim MVV	119
Funari Barracks	City of Mannheim MVV	32,023
Grünstadt AAFES Fac.	Stadtwerke Grünstadt	97,626
Rheinau Coal Point	City of Mannheim MVV	1,191
Spinelli Barracks	City of Mannheim MVV	75,102
Sullivan Barracks	City of Mannheim MVV	90,602
Taylor Barracks	City of Mannheim MVV	74,981
Turley Barracks	City of Mannheim MVV	43,035
Worms Auto Strip Yard	Stadtwerke Worms	326
Total		**1,270,256**

All domestic and industrial wastewater generated at the 293rd BSB Mannheim installations is discharged through BSB-controlled subsystems to municipal wastewater collection and treatment facilities. The BSB does not operate any domestic wastewater treatment plants (DWTPs).

Sanitary sewers and storm drains are combined and therefore share the same pipes at the Mannheim installations. The timing of effluent discharge is controlled by stormwater management basins. This allows the peak volumes encountered during storm events to be released evenly over a longer period of time.

TABLE 4.3.2

WASTEWATER TREATMENT

Location	Wastewater Treatment and Storm Water Management	Discharge Limits
Mannheim	Combined domestic, industrial and storm water collection system, which discharges to the Mannheim City wastewater treatment plant.	35° C, pH 6-9.5
Worms	Combined domestic, industrial and storm water collection system, which discharges to the Mannheim City wastewater treatment plant.	35° C, pH 6-9.5
Grünstadt	Combined domestic, industrial and storm water collection system, which discharges to the Mannheim City wastewater treatment plant.	35° C, pH 6-9.5
Grünstadt AAFES Depot	Sanitary sewer overflow and storm water discharge directly into a surface water body.	

4.4 WASTE MANAGEMENT

4.4.1 Solid Waste

Solid waste is sorted into 18 categories on site (Table 4.4.1). The waste is collected by in-house work force and taken for disposal or is brought to the Sort Center by the customer. The SORT Program requires each household and quarters to separate their trash, and deposit the separated waste into the proper containers located in or near the housing areas. The four main waste types include Recyclable Paper Waste, Yellow Bag Waste, Glass Waste and Household Refuse. The BSB pays over Euro 250 per ton to dispose of the Household Refuse. The other three types of waste are recyclable and can be disposed of at little or no cost to the BSB. Waste that cannot be recycled or reused is sent to the incinerator/cogeneration plant in Mannheim.

TABLE 4.4.1

SOLID WASTE COLLECTION (Total FY 2000)

Category	Tonnage (U.S. tons)
Refuse	9,569.00
Mixed Paper	906.06
Cardboard	175.30
Colored Glass	76.02
Glass Panes	1.50
Metal	59.00
Wood	1,200.62
Construction Debris	790.95
Biodegradable (Food)	1,089.18
Biodegradable (Yard)	308.00
Tires	13.55
Lead Acid Batteries	88.91
Recyclables/Yellow Bag	218.00
Household Hazardous Waste	6.10
Other (Refrigerators)	6.10
Other (Bulk Waste)	34.20
Other (Clothes)	6.70
Other (Electronic Scrap)	11.30
Furniture Recycling (Wood)	11.00
Brass Metal	0.50

4.4.2 Hazardous Wastes

Hazardous waste is generated in DPW shops and maintenance areas, motor pools, auto craft shops, and various other tenant support organizations. The most common hazardous wastes generated at 293rd BSB Mannheim are used POL products, POL-contaminated solids (e.g. oily rags, contaminated dry sweep, used oil filters, and waste oil cans), used batteries, waste paint and paint-related material, waste solvents, waste fuel, and waste aerosol cans. The BSB does not operate its own Hazardous Waste Storage Area (HWSA) but uses the DRMO HWSA on Coleman Barracks. Hazardous waste accumulation points (HWAPs) are located at strategic points in motor pools throughout the BSB. Some units also operate small HWAPs within their work areas. The HW collected at these locations is then transferred to the

consolidated HWAP. Hazardous waste management is executed according to the Hazardous Waste Management Plan (FY1999).

4.4.3 Landfills

There are no landfills on the installation.

4.5 PROJECTED CHANGES IN FACILITIES

Projected changes in facilities are amended to meet the requirements of the mission and are therefore not fixed.

Major changes at the 293rd BSB Mannheim are going to take place mainly at Coleman Barracks. A number of buildings will be taken down and two new soldier barracks will be constructed in the near future. The Army Airfield at Coleman will be upgraded. Aviation Operations are going to be moved from Heidelberg to Coleman in the future, the exact date, however, is still unknown. Major changes in the Aviation Operations cannot take place prior to approval of the respective municipal and district governments. The Worms Auto Strip Yard will either be upgraded or shut down, depending on the availability of an alternative site for a new strip yard. The sewer systems at Benjamin Franklin Village, Sullivan, and Funari Barracks will be repaired or replaced.

CHAPTER 5.0

NATURAL RESOURCES AND CLIMATE

5.1 SETTING

Eleven of the 17 installations of the 293rd BSB are situated in the Regierungsbezirk Karlsruhe of the State of Baden-Wuerttemberg on land belonging to the City of Mannheim. Lampertheim Training Area is located in the Regierungsbezirk Darmstadt of the State of Hesse in the Bergstrasse County. The five locations west of the River Rhine are part of the Rheinhessen-Pfalz region of the State of Rhineland-Palatinate. The northernmost installation is the Auto Strip Yard in the City of Worms. Dannenfels Communication Station is located far to the west on the *Donnersberg* Mountain within in the Donnersberg County. The locations at Grünstadt are in the County of Bad Dürkheim. The Edigheim Beacon Site is situated in the north of the City of Ludwigshafen. These locations are shown in Chapter 2, Figure 2.1.2.

The 293rd BSB lies in six geographical regions (natural landscape units according to the German landscape classification) known as the *Neckar-Rheinebene (Neckar and Rhine Plain)*, the *Hessische Rheinebene (Hessian Rhine plains),* the *Nördliche Oberrheinniederung (Northern Upper Rhine Plain)*, the *Haardtrand (Edge of the Haardt Highlands)*, the *Nordpfälzer Bergland (Northern Palatinate Highlands),* and the *Rheinhessische Tafel und Hügelland (Rhine-Hessian Plateau and Hill Country)*.

Most of the installations in and around Mannheim are part of the natural regions of the Rhine Valley, being within the *Hessische Rheinebene,* the *Neckar-Rheinebene*, and the *Nördliche Oberrheinniederung.* This region is a more or less flat riverine landscape often overlain by layers of eolian sands. In some areas, these have formed inland dunes of highest ecological significance. Forests are generally rare in this natural region due to intensive farming activities and heavy urban pressure induced by the large Cities of Mannheim and Ludwigshafen. The individual locations are situated as follows:

Hessische Rheinebene : Lampertheim Training Area, Coleman Barracks, Mannheim Class III Point, Benjamin Franklin Village, Sullivan Barracks, Taylor Barracks, Funari Barracks, and Turley Barracks.

Neckar-Rheinebene: Spinelli Barracks, Friedrichsfeld Store Area, and Friedrichsfeld QM Services

Nördliche Oberrheinniederung: Worms Auto Strip Yard, and Edigheim Beacon Site.

Grünstadt AAFES is situated in the southernmost part of the *Rheinhessische Tafel und Hügelland.* This area is generally dominated by fertile loess soils on rolling hills and is ideal for intensive fruit growing, viniculture and asparagus farming. The Grünstadt AAFES installation is however located in a fully industrialized area.

Grünstadt Communication Site is located high above Grünstadt on the "Gemeindeberg" overlooking the entire Rhine Valley from Darmstadt to Heidelberg. It is part of the *Haardtrand.*

Dannenfels Communication Site is part of the natural region *Hoher Donnersberg,* which is a subdivision of the *Nordpfälzer Bergland*. The Donnersberg (687 ASL) is the highest point in the area and is a mainly forested mountain.

5.2 CLIMATE

The installations of the 293rd BSB Mannheim are located in the climatic district *nördliches Oberrhein-Tiefland.* This is part of a transitional zone between oceanically influenced western Germany, and more continentally influenced southern Germany. The relatively high annual temperature range of 18^{o} C is indicative of a tendency to a more continental character of the local climate. Warm and dry summers, mild winters and low annual precipitation characterize the climate.

5.2.1 Temperature

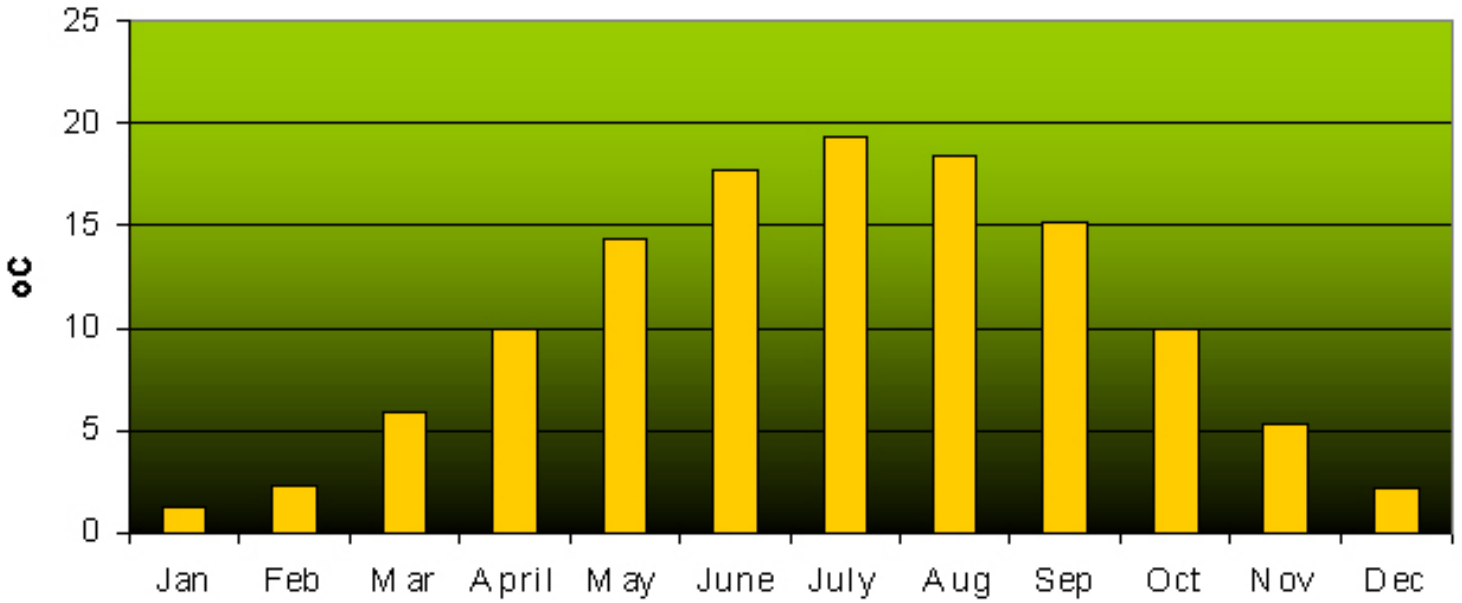
With an annual average temperature of more than 10^{o}C, a winter average of more than 1^{o}C, and a July average of more than 19^{o}C the climate is very warm for Central Europe. There are an average of 47 summer days with temperatures over 25^{o}C per year. Figure 5.2.1 shows the 30-year average monthly temperature recorded for Mannheim.

5.2.2 Precipitation

Precipitation on the other hand is quite low in this area. Annual values of 640 mm for Mannheim are among the lowest values recorded in Germany. The installations of the 293rd BSB Mannheim are located within the "rain shadow" of the Pfälzer Wald in the west; this accounts for these low precipitation values. Figure 5.2.2 shows the average monthly precipitation recorded for Mannheim.

FIGURE 5.2.1

MONTHLY TEMPERATURES AT MANNHEIM



Source: Müller-Westermeier (1990): Klimadaten der Bundesrepublik Deutschland, Zeitraum 1951-1980

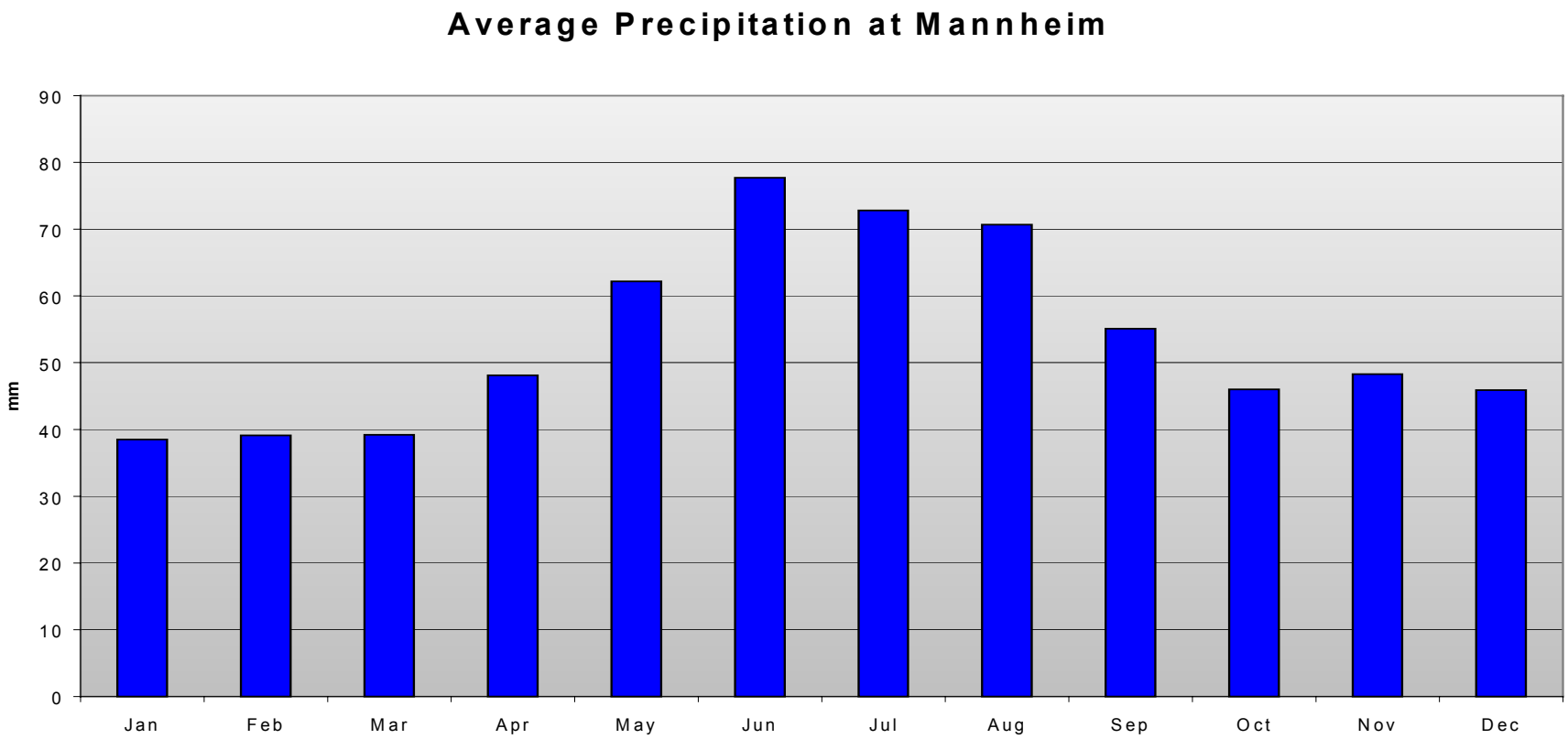


FIGURE 5.2.2

Source: Müller-Westermeier (1990): Klimadaten der Bundesrepublik Deutschland, Zeitraum 1951-1980

5.3 TOPOGRAPHY

The parcels of land constituting the 293rd BSB are dominated by flat areas at a low altitude in and along the Rhine Valley. The elevation only varies 91 m at Edigheim Beacon Site and Coleman Barracks to 109 m at Friedrichsfeld QM Services. This implies a range of only 18 m over an area of approx. 400 km^2. Only the western installations at Grünstadt and at Dannenfels are located significantly higher. Dannenfels Communication Station is located on top of Donnersberg Mountain (588 m), the highest point in the entire region. The following section summarizes the key topographical features for each of the locations (see Figure 5.3.1 for topographical maps of the installations).

Sullivan Barracks, Funari Barracks, Taylor Barracks, and Spinelli Barracks, located in the City of Mannheim, are typical urban barracks with several types of buildings, parking lots, motor pools, open and covered storage areas, lawns and typical urban tree stands. They are 90 to 100 m above sea level. The older buildings date back to 1937 to 1939 when the German Reichswehr constructed new barracks country-wide. Only Turley Barracks dates back into the end of the 19th Century when it was built as Kaiser Wilhelm Kaserne.

Coleman Barracks was also founded by the German Reichswehr in 1938 - as an airfield. It has been used by the U.S. Army since 1945. This flat and wide area is still used as barracks and army airfield. The southern and eastern part is used as barracks with several types of buildings, parking lots, lawns and some urban tree stands. The northwestern half encompasses the airfield with its vast grasslands. The entire installation is built on an area covered by eolian and calcareous sands. The elevation ranges from 90 to 94 m.

Worms Auto Strip Yard, Mannheim Class III Point, Friedrichsfeld Storage Area, Friedrichsfeld Quarter Master Services, and Grünstadt AAFES Center are typical industrial facilities in the middle of industrialized areas. All of them have little to no vegetation cover as most of these facilities are mainly covered by streets, buildings, concrete etc. The elevation is approximately at 95 m at Worms and 100 m at Friedrichsfeld. Grünstadt AAFES is 167 m above sea level, and located between the Autobahn A6 and railroad tracks.

Benjamin Franklin Village, built in 1951 and 1956, is the only typical housing area left. It is located between Sullivan Barracks and Funari Barracks. The southern part is characterized by 12- and 18-family buildings surrounded by extensive lawns and playgrounds. It also encompasses a big school complex with several athletic fields. The northwestern part has smaller 4-family houses.

Grünstadt Communication Station is located at an elevation of 315 m to 327 m on the "*Gemeindeberg,"* a smooth ridged hill. The "*Gemeindeberg"* descends slightly to the northeast. This long drawn-out installation has no permanent buildings, mainly being covered by concrete platforms for communication vehicles. There is also a Gotcha-field. The area is surrounded by meadows and fields.

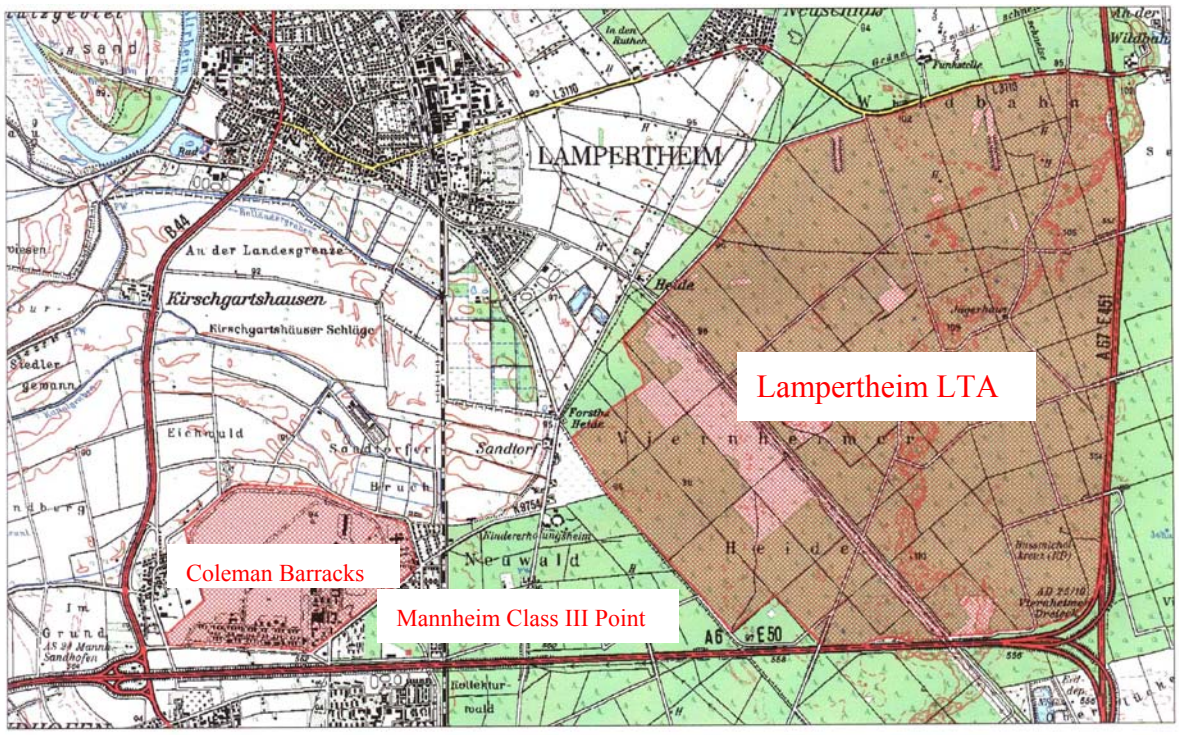
Dannenfels Communication Station is a big radio antenna and some operational buildings on top of the Donnersberg, the highest mountain in the *Pfalz* (687 m). The installation is neighbored by other communication facilities and completely surrounded by extensive mixed forests.

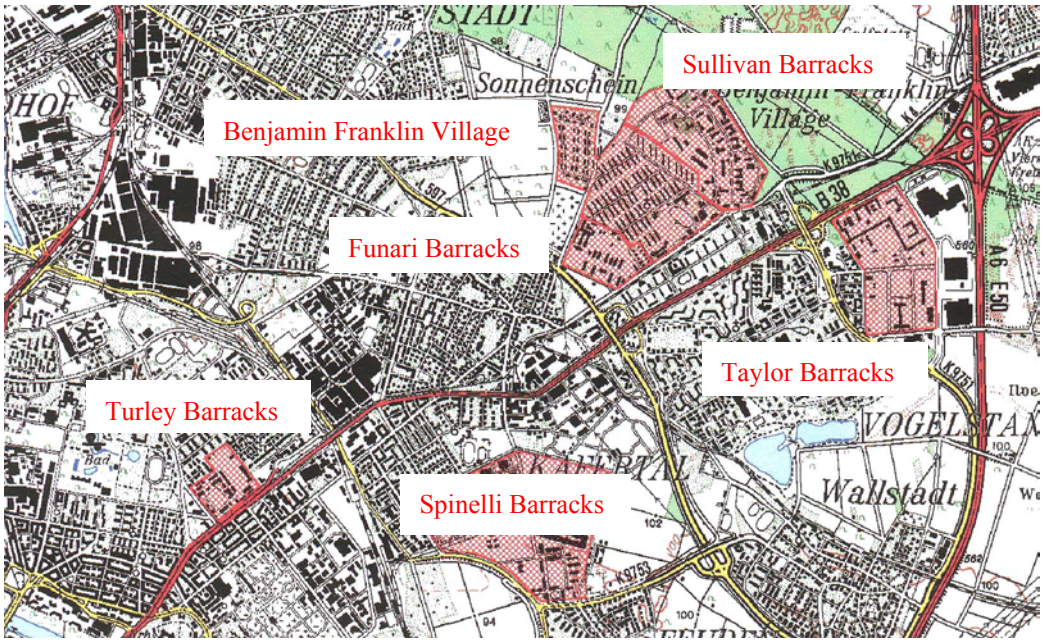
Lampertheim Local Training Area is located east of Coleman Barracks. It is mainly covered by pine forest and is part of the sand dune area *Käfertal-Viernheimer Sand.* The forest is interspersed with several extensive as well as small open areas with sand vegetation. The area is nearly flat at an elevation of 95 to 96m. The altitude only increases (105 to 107m) along the sand dunes ridge that runs from north to south.

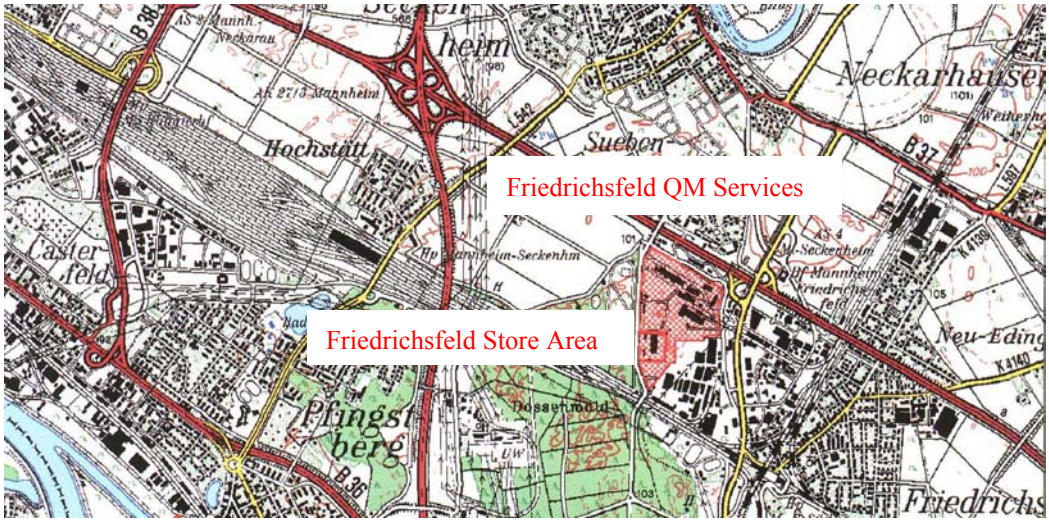
FIGURE 5.3.1

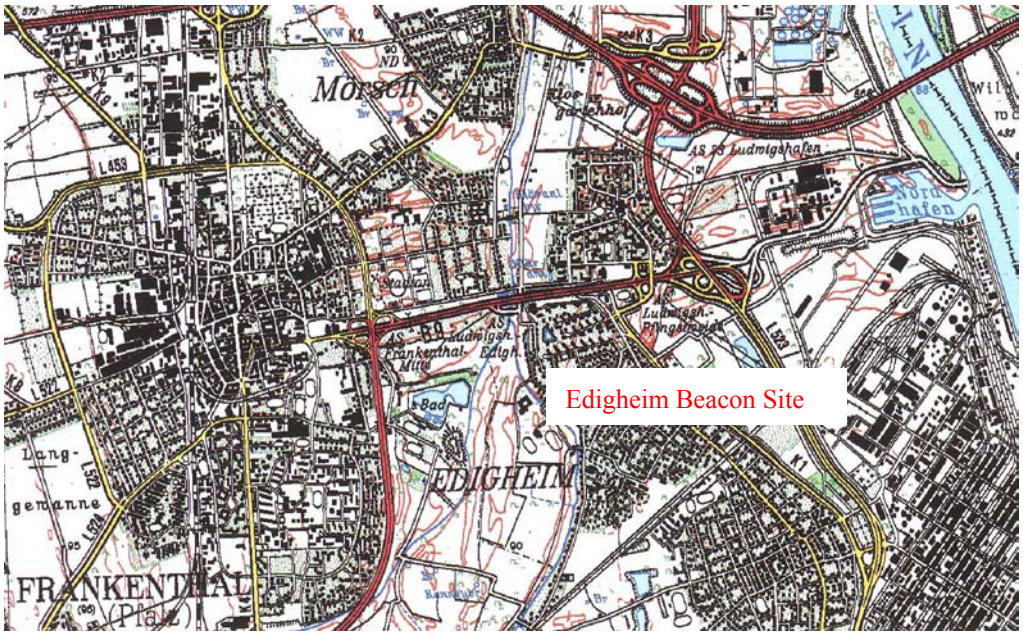
TOPOGRAPHY OF THE 293rd BSB Mannheim

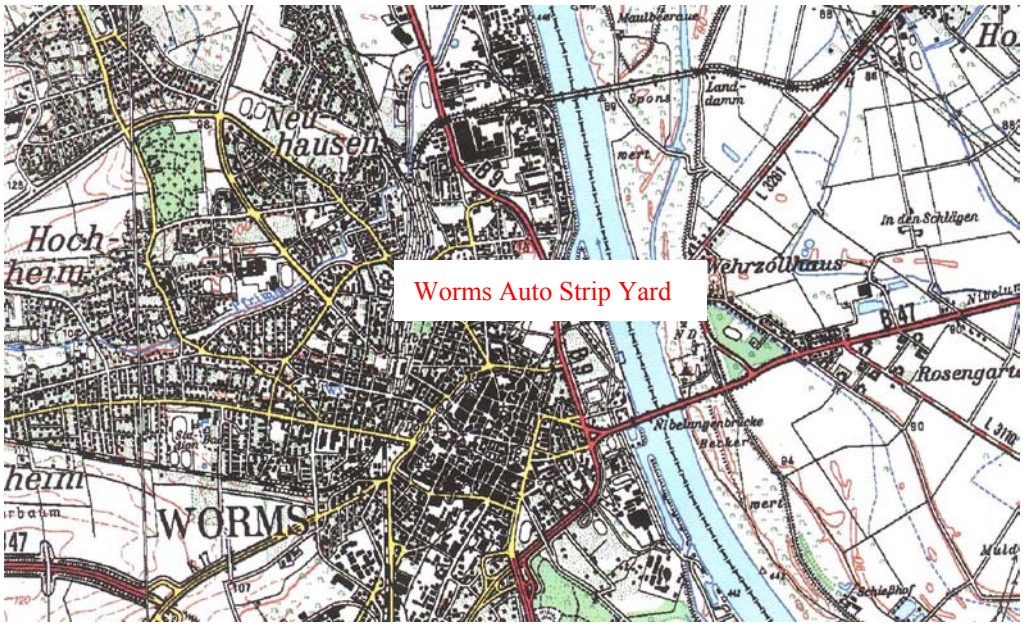
All following detail maps: Source: TOP50 – Baden Wuerttemberg, Rhineland-Palatinate/Saarland, Hesse,

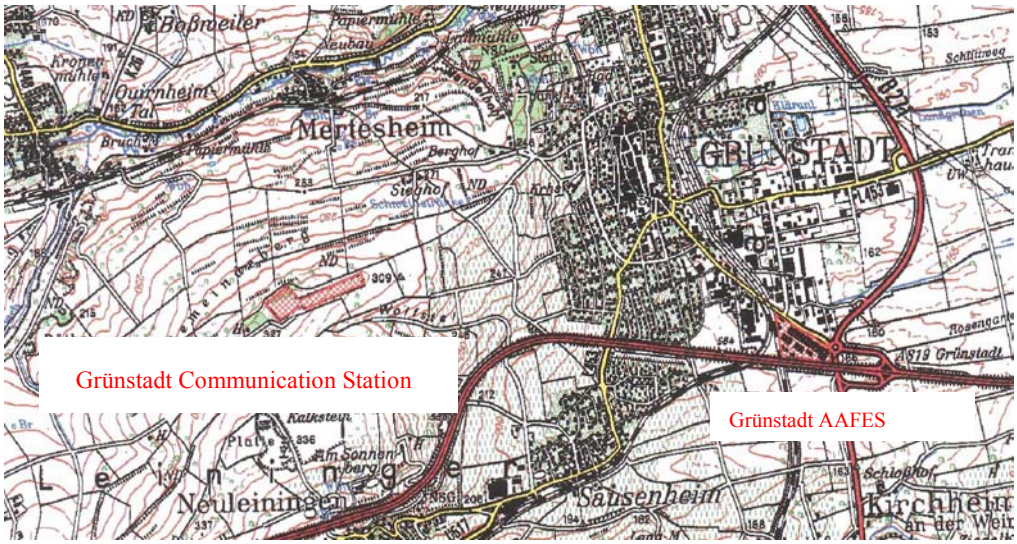


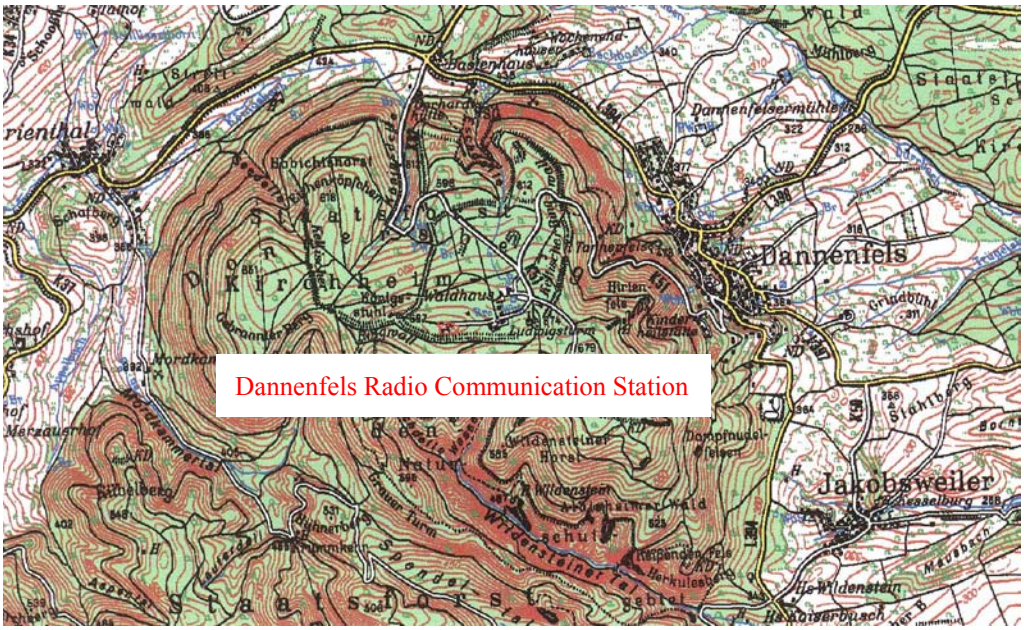

Sullivan Barracks
Benjamin Franklin Village
Funari Barracks
Taylor Barracks
Turley Barracks
Spinelli Barracks
Sonnenschein
Village
Wallstadt
B 38
A6 E50


Friedrichsfeld QM Services
Friedrichsfeld Store Area
Hochstätt
Sueben
Neckarhausen
B 37
B 36


Edigheim Beacon Site
Mörsch
EDIGHEIM
FRANKENTHAL


Worms Auto Strip Yard
Neuhausen
Hochheim
WORMS


Grünstadt Communication Station
Grünstadt AAFES
Merlesheim
GRÜNSTADT
Neuleiningen
Sausenheim
Kirchheim
an der Weir


Dannenfels Radio Communication Station
Dannenfels
Jakobsweiler

5.4 GEOLOGY

This section provides an overview of the geology found within the external boundary of the Cantonment Areas and the Training Areas. The geology of the 293rd BSB Mannheim is clearly dominated by sediments from the Quaternary period, mainly sand-influenced layers from the late Pleistocene. Although the individual installations are scattered over an extensive area, the occurrence of geological layers is restricted to the period mentioned above; the installations at Grünstadt and the Dannenfels Communication Site are the only exceptions. The latter, located high above the Rhine valley, is built on Permian Rotsandstein.

Grünstadt Communications Site on the other hand is situated on calcareous limestone from the Miocene and upper Oligocene in the middle of the Tertiary period.

The AAFES Center at Grünstadt is located on sediments of the Pliocene from the younger Tertiary period.

Quaternary sediments (e.g. eolian sands, fluviatile terrace sands and gravel) are characteristic of most other installations situated in the Rhine valley or more precisely the *Oberrheinebene*. These installations therefore have a relatively similar geological history. In nearly in all cases, the last chapter thereof is characterized by the deposition of eolian sands after the last ice age and its weathering and development until today.

Coleman Barracks, and Mannheim Class III Point are situated on Holocene fluviatile sediments, which are a mixture of loam, sand, and gravel particles. The areas around Coleman Barracks and Mannheim Class III Point are furthermore both almost completely covered by an eolian sand layer. Valuable sand meadow vegetation can thus be found here.

Lampertheim Training Area, Benjamin Franklin Village, Sullivan Barracks, Taylor Barracks, Funari Barracks, Turley Barracks, Friedrichsfeld QM Services and Friedrichsfeld Storage Area are situated directly on eolian sand layers, which have partly developed into sand dunes. This sand was transported here from the western parts of the Rhine valley at the end of the *Würm*-Ice age. These eolian sand layers are more than 10 m thick in some places. Such

dunes, if undisturbed, are among the most rare geomorphological formations within Central Europe.

Worms Auto Strip yard is located on flood sediments from the Rhine dating back to the Pleistocene.

Edigheim Beacon Site is the only installation on alluvial loam in a silted riverbed.

Figure 5.4.1 shows the geology of the 293rd BSB. The locations can be ordered according to the age of the different geological layers, as is shown in Table 5.4.1 below. Individual installations may appear in the table more than once due to their varying geological situation.

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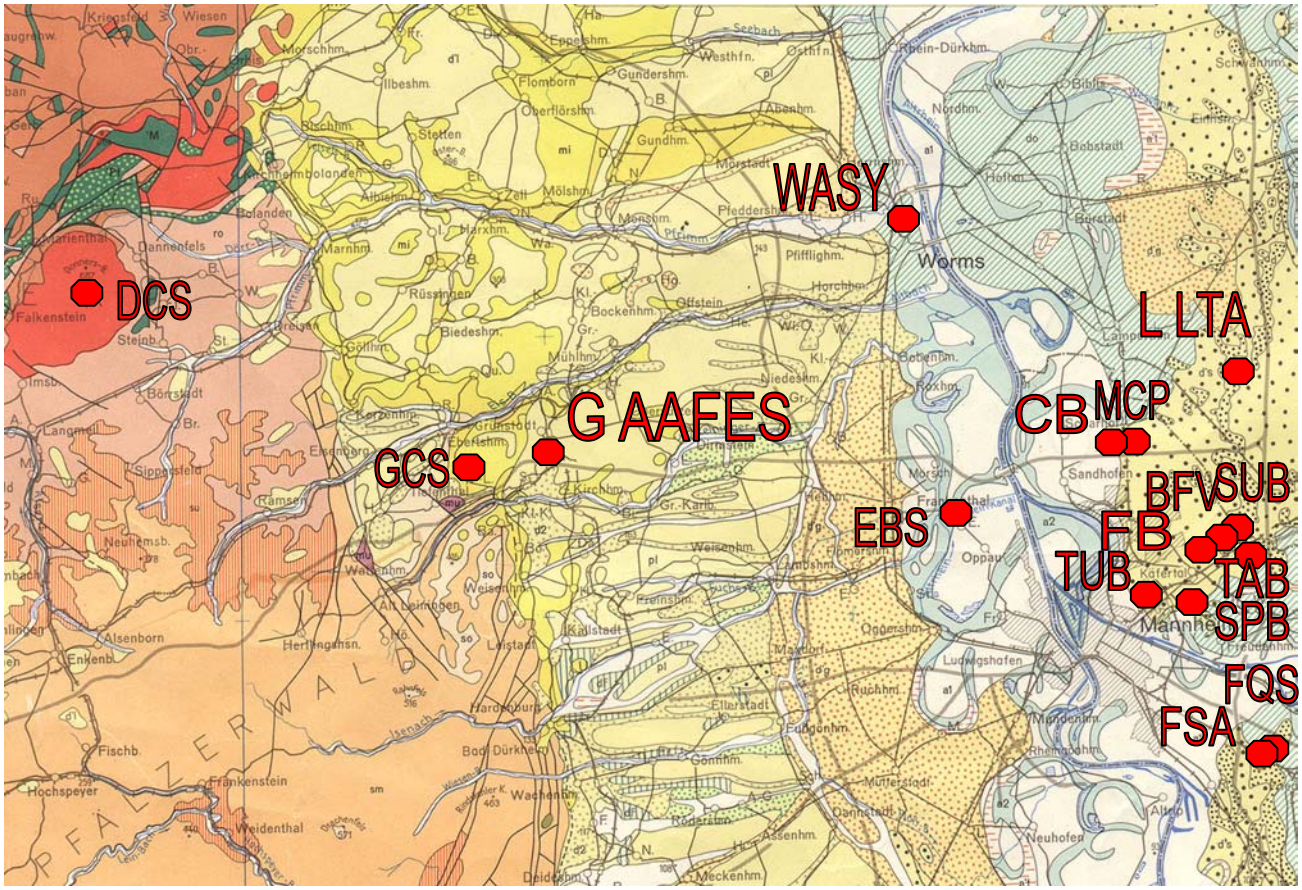
TABLE 5.4.1

GEOLOGICAL DISTRIBUTION

Installation	Period	Type of sediment/rock
Edigheim Beacon Site	Holocene	Alluvial loam
Coleman Barracks Mannheim Class III Point	Holocene	Young fluviatile sediments, mixture of loam, sand, and gravel
Worms Auto Strip Yard	Pleistocene	High-flood sediments, mixture of clay and loam
Lampertheim Training Area Sullivan Barracks Taylor Barracks Friedrichsfeld QM Services Friedrichsfeld Storage Area	Pleistocene Last Ice Age	Sand dunes
Coleman Barracks Lampertheim Training Area Sullivan Barracks Benjamin Franklin Village Taylor Barracks Turley Barracks Friedrichsfeld QM Services Friedrichsfeld Storage Area	Pleistocene	Eolian sand
Grünstadt AAFES	Pliocene	Sediment mixture of clay, sand and gravel
Grünstadt Communication Station	Miocene	Sand, limestone
Grünstadt Communication Station	Oligocene	Sand, limestone
Dannenfels Comm. Station	Red beds	Porphyry

FIGURE 5.4.1

GEOLOGICAL MAP OF THE REGION OF THE 293rd BSB MANNHEIM



Scale: 1:300,000; Source: Geologische Übersichtskarte von Hessen
[published by Hessisches Landesamt für Bodenforschung, Wiesbaden, 1976]

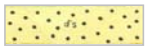
Legend


Alluvial loam (silted up river-beds)


Loam, sand and stone (young high-flood deposits)


Peat (raised bog and fen)


Clay and loam (old high-flood deposits)


Eolian sand


Loess, loamy loess, finely sandy


Stone, sand (low terraces)


Stone, sand (middle terraces)


Stone, sand (high terraces)


Stone, sand (unstructured terraces)


Gravel, sand, clay, peat coal, marl, marly sand, (preglacial formation)


Clay, sand, gravel, peat coal (Pliocene period)


Sand, clay, peat coal, limestone (Miocene period)


Clay, sand, marl (Oligocene period)


Gypsum, marl and clay stone, quartzite, slab sandstone (Upper Bunter)


Sandstone and clay stone, conglomerate (Middle Bunter)


Sandstone and clay stone, conglomerate (Lower Bunter)


Melaphyre, Kuselite / Porphyrite


Porphyry, quartzite porphyr / quartzite porphyr of the *„Lemberg"*


Conglomerate, sand and clay stone


Conglomerate, sand and clay stone

5.5 SOILS

Worms Auto Strip Yard and Edigheim Beacon Site are predominantly situated on young flood sediment. Here the natural soil development was dependent on the groundwater influence, and ranges from gley over podzolic parabraunerde to regular braunerde. However, only Edigheim Beacon Site still has natural soil. The other installations are more or less covered by anthropogenically sealed surfaces.

The other installations in Mannheim are located on the lower terrace of the Rhine. These are vast gravel plains covered with sandy flood sediments and eolian sand. The thickness of the sand layers on these gravel plains varies greatly. The soils that have developed here are stratified more or less podzolic parabraunerde, which is somewhat de-calcified. The calcareous sand from the Middle Ages is only exposed where recent sand dunes have been disturbed or have migrated. Currently such dunes can only be found at Lampertheim Training Area, where the soils are still partly calcareous and thus initially develop loose syrosem and subsequently pararendzinas.

The natural development at Grünstadt AAFES had progressed to a parabraunerde, which is now nearly completely sealed.

Grünstadt Communication Site is located on calcareous soil from the Oligocene, which has developed into a typical rendzina soil.

The soil at Dannenfels Communication site has to be designated as braunerde over Porphyry.

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TABLE 5.5.1
SOILS OF THE 293rd BSB

Installation	Type of sediment/rock	Type of soil
Edigheim Beacon Site	Alluvial loam	Wet gley
Worms Auto Strip Yard	High-flood sediments, mixture of clay and loam	Grey tschernosem, braunerde
Lampertheim Training Area Sullivan Barracks Taylor Barracks Friedrichsfeld QM Services Friedrichsfeld Storage Area	Sand dunes	Undisturbed: layered parabraunerde Disturbed: protosoil
Coleman Barracks Lampertheim Training Area Sullivan Barracks Benjamin Franklin Village Taylor Barracks Turley Barracks Friedrichsfeld QM Services Friedrichsfeld Storage Area	Eolian sand	Undisturbed: braunerde and layered parabraunerde Disturbed: protosoil
Grünstadt AAFES	Sediment mixture of clay, sand and gravel	parabraunerde
Grünstadt Communication Station	Sand, limestone	rendzina
Dannenfels Comm. Station	Porphyry	braunerde

5.6 PETROLEUM AND MINERALS

No mineral or petroleum extraction is currently taking place on the land of the 293rd BSB.

5.7 WATER RESOURCES

5.7.1 Surface Water

Only few surface waters could be identified on the installations of the 293rd BSB Mannheim. Some temporary or permanent pools and puddles could only be identified in Coleman Barracks and Lampertheim Training Area. At Taylor Barracks a small Cattail marsh has been identified. The temporary puddles in the LTA were probably all created by intensive use of heavy vehicles, which dammed the underlying soils making them impermeable for rainwater. The water quality of these small bodies of water should generally be good as neither fertilizers nor pesticides may be used on the installations.

5.7.2 Groundwater

Most of the groundwater in the Mannheim area originates from the Kraichgau and Odenwald uplands east of Mannheim, as well as from precipitation seepage. The rivers Neckar and Rhine supply the area with additional groundwater during flooding periods. Water from the Buntsandstein and the bedrock northeast of Mannheim drains into the gravel of the Rhine Valley subterraneously, as well as through a number of small tributaries. The River Rhine forms the final receiving water course for the entire Mannheim watershed area.

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5.8 ECOLOGICAL COMMUNITIES

This section is divided into two parts. Section 5.8.1 describes the vegetation types or ecological communities expected to occur at the installation if human influence is removed, and Section 5.8.2 describes the existing vegetation communities. The difference between the predicted communities, or the potential natural vegetation (pnV), and the existing vegetation shows the ecological status of a land area with respect to succession to climax vegetation (stable self-perpetuating communities under prevailing environmental conditions). This is important for land management purposes.

Sections 5.9 concerning flora and 5.10 concerning fauna, focus more on individual species and biotopes, while Section 5.11 concentrates specifically on threatened and endangered species.

5.8.1 Potential Natural Vegetation (pnV)

Determination of pnV is a standardized process based on several factors including geology, soil, climate, aspect, and topography. With this information an anticipated vegetation community can be predicted if human influence is removed. The Braun-Blanquet classification methodology lists the following common and scientific names for forest communities which can represent pnV:

- Acidic Beech Forest (*Luzulo-Fagetum*),
- Acidic Beech Forest with Wood Millet (*Luzulo-Fagetum milietosum*),
- Wood Millet/Beech Forest (*Milio-Fagetum*),
- Elm/Hornbeam forest (*Ulmo-Carpinetum*),

The whole region including all the land of the 293rd BSB was subject to a pnV survey in 1992 when extensive areas where mapped for the Potential Natural Vegetation Map of the Federal Republic of Germany. The survey was carried out in a scale of 1:50,000. The pnV for the individual areas within 293rd BSB can be postulated from this map as shown in Table 5.8.1.

TABLE 5.8.1

POTENTIAL NATURAL VEGETATION

Installation	Potential Natural Vegetation	Description of pnV Unit
Benjamin Franklin Village	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Coleman Barracks	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Lampertheim Training Area	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Taylor Barracks	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Sullivan Barracks	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Friedrichsfeld QM Services & Storage Area	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Spinelli Barracks	*Ulmo-Carpinetum*	Hardwood-rich Hornbeam forest with well growing trees. Shrub layer is rich in individuals as well as species. Rich herb layer with shade tolerating species.
Mannheim Class III Point	*Ulmo-Carpinetum*	Hardwood-rich Hornbeam forest with well growing trees. Shrub layer is rich in individuals as well as species. Rich herb layer with shade tolerating species.
Turley Barracks	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Funari barracks	On acidic sand: *Luzulo-Fagetum* On calcareous sand: *Milio-Fagetum*	Beech forest, with Chestnut Oak and Lily-of-the-Valley with high trunked trees. Few shrubs, ground fully shaded. Beech forest with high trunked trees. Poor shrub layer
Worms Auto Strip Yard	*Ulmo-Carpinetum*	Hardwood-rich Hornbeam forest with well growing trees. Shrub layer is rich in individuals as well as species. Rich herb layer with shade tolerating species.

Installation	Potential Natural Vegetation	Description of pnV Unit
Edigheim Beacon Site	*Ulmo-Carpinetum*	Hardwood-rich Hornbeam forest with well growing trees. Shrub layer is rich in individuals as well as species. Rich herb layer with shade tolerating species.
Grünstadt Communication Site	*Milio-Fagetum*	Beech forest with high trunked trees. Poor shrub layer, good herb layer with many individuals particularly on fresh soils.
Grünstadt-AAFES	*Milio-Fagetum*	Beech forest with high trunked trees. Poor shrub layer, good herb layer with many individuals particularly on fresh soils.
Dannenfels Communication Site	*Luzulo-Fagetum milietosum* (submontane variety)	Similar to lowland variety, but with no Chestnut Oak or Lily-of-the-Valley.

5.8.2 Existing Vegetation

No contiguous survey of the vegetation of the 293rd BSB Mannheim has taken place to date, although several independent studies and surveys exist and can provide information for some of the locations. These include:

- Breunig, T. & König, A.(1989): *Grundlagenuntersuchung über Dünenstandorte und Sandrasenvegetation*. - Information on remains of sand dune vegetation in Käfertal near Benjamin Franklin Village, Taylor Barracks and Spinelli Barracks.
- Buttler, K. & Stieglitz, W. (1976*): Floristische Untersuchungen im Meßtischblatt 6417 (Mannheim Nordost)* Results of a floristic grid mapping of the 1:25.000 topographic map "Mannheim north-east".
- Demut, S. & T.Breunig (1999). *Schutzgebietskonzeption Hardtplatten.* Protection concept for all significant sand biotopes in the Karlsruhe district from Mannheim to Rastatt.
- GefaÖ (1998)*: Threatened and Endangered Species Survey (TES) im Airfield Bereich der Coleman Barracks Mannheim*. - Detailed survey on TES species, information on vascular plants, birds, ground beetles, locusts, and spiders incl. management recommendations
- GefaÖ (1999)*: Threatened and Endangered Species Survey (TES) Local Training Area (LTA), Lampertheim* - Detailed survey on TES species, information on vascular plants, birds, ground beetles, locusts, and spiders as well as biotope types incl. management recommendations
- GefaÖ (1998): *Erfassung der §24a- Biotope auf Militärischen Einrichtungen im Stadtkreis Mannheim. Ergänzung zum Endbericht von 1995*. Classification of biotopes protected according to §24 of the Baden-Württemberg Conservation Act (BnatG).
- Kristal, M. (1994*): Bestandsaufnahme der Großschmetterlingsarten der Viernheimer Heide*. Extensive list of butterflies and moths identified in an area directly west of Lampertheim LTA.
- LFU Baden-Württemberg (2001*): Natura 2000; Datenblätter; Gebietsvorschlag 6517-302 Mannheimer Sand.* Data on vegetation and flora of an area directly neighboring Spinelli Barracks

- LfUG Oppenheim (2002): *Natura 2000; Datenblätter; Gebietsvorschlag 6313-301 Donnersberg* Data on vegetation, flora, and fauna of the Donnersberg area. Dannenfels Radio Communication Station is definitely included.
- LfUG Oppenheim (2002): *Natura 2000; Datenblätter; Gebietsvorschlag 6514-401 Haardtrand* Data on birds of the Grünstadt area. Grünstadt Communication Station is definitely included.
- Schwarzwälder, S. (1994*): Biotopmanagementplan im Bereich des Waldschutzstreifens der Viernheimer Heide* Detailed 10-year management plan for the area under the high tension power lines crossing Lampertheim LTA.

These studies and their results are discussed further in Volume III, Chapter 14.5. The following section therefore provides an overview of the vegetation that is known to exist on the installations of the 293rd BSB. This list also demonstrates that most ecologically driven previous surveys in the Mannheim Region concentrated on the rare sand dunes and their vegetation. A § 24 mapping was carried out on the land of the 293rd BSB Mannheim in 1998 to classify and protect ecologically valuable and threatened biotopes.

Coleman Barracks, Sullivan Barracks, Taylor Barracks, Funari Barracks, Spinelli Barracks, Turley Barracks, and Friedrichsfeld QM Services

These areas are largely made up of buildings and facilities, large motor pool areas, roads, parking lots and differing amounts of urban trees. All of them also have extensive areas with tended lawns and/or sparse grassland vegetation with semi-improved parking or storage areas on sandy soils. The latter may potentially bear oligotrophic grasslands (with rare sand vegetation) and are therefore potential areas of ecological interest particularly if they were tended without the use of fertilizers in the past decades. The §24 mapping identified valuable biotopes on Coleman Barracks, Sullivan Barracks, Taylor Barracks and Friedrichsfeld. At Coleman Barracks, two sand meadow biotopes exist on the airfield, one north of Blumenau and one east of the small community of Scharhof. On Sullivan Barracks and at Friedrichsfeld, two sand meadows were identified and mapped on each installation. At Taylor Barracks, a wetland area was identified as §24 biotope. It is one of the best maintained Cattail biotopes in Mannheim.

Benjamin Franklin Village

The buildings are surrounded by well-tended lawns, playgrounds and parking lots. The village is built on eolian sand layers, thus these lawns may bear remains of rare oligotrophic sand meadows. A vegetation survey would therefore be of ecological interest.

Worms Auto Strip Yard, Grünstadt AAFES, and Friedrichsfeld Storage Area,

These installations are typical industrial facilities in the middle of industrialized areas. They all have little to no vegetation cover as most of them are mainly covered by streets, buildings, concrete, etc.

Mannheim Class III Point,

Besides the buildings and parking area for cars and vehicles there are some tended lawns and a stock of urban trees structuring the otherwise flat installation and shaping it in a more pleasant way.

Grünstadt Communications Station

Grünstadt Communication Station, situated on a smooth hill ridge, is an open area partly covered by concrete platforms for communication vehicles. The unimproved part of the area is mainly occasionally mowed grassland. This area is situated on calcareous soils, thus the grassland vegetation, as well the numerous shrubs in and around the area, may be of high diversity and bear some ecologically interesting plant species. The area is furthermore within an area nominated as a Special Protected Bird Area within the Natura 2000 System. A control survey on birds and vegetation could state the actual ecological value of this area.

Dannenfels Radio Communication Station

This area is very small and mainly covered by semi-improved lawns. It is thus of no special ecological interest. It should however be borne in mind that it is located in the middle of the extensive "Donnersberg" FFH Area.

Coleman Barracks (Airfield)

This installation is mainly located on thick layers of eolian sand. The vegetation is thus dominated by oligotrophic vegetation units of dry sand-soils. The extensive area north of the

runway is mainly characterized by dry slightly ruderalized grassland interspersed with several patches of dry sand meadows. In the north, these are particularly rich in mosses and lichens, indicative of the advanced higher age of these vegetation units. These are the largest sand meadows on the land of the City of Mannheim and therefore of particular ecological significance. This value is increased by the occurrence of a patchwork of several stages of sand meadow succession including several TES species. Other areas around the bunkers show more or less heavily ruderalized grassland vegetation with many tall herbs. Moist to wet spots with reed vegetation can be found in some small places.
Very sparse and ruderalized dry sand-meadows are protected by § 24 Landscape Management Act of Landespflegegesetz (LPflG).

Altogether, the open areas of the Coleman Barracks Airfield are of statewide importance from an ecological point of view and should be taken care of by all users.

Lampertheim Local Training

The LTA is also located on thick layers of eolian sand, which have accumulated to inland sand dunes in some places. It must be pointed out that none of the vegetation studies carried out on the LTA included Braun-Blanquet vegetation mapping. This aspect has still not been surveyed for the majority of the forested areas. On the other hand, literature data already gives a good insight into the situation of the vegetation cover of the open areas.

These are mainly characterized by dry slightly ruderalized grassland interspersed with several patches of dry sand meadows. The most important plant communities (also listed in the FHH Directive as being of European interest) in these areas are:

- Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco Brometalia)* (FFH Code 6210)
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festucetalia valesiaceae)* (FFH Subcode 6211)
- Open grassland with *Corynephorus* and *Agrostis* on continental dunes (FFH Code 2330)
- Xeric sand calcareous grasslands (*Koelerion glaucae*) (FFH Code *6120)

The above-mentioned vegetation units are also protected by § 15d Hessian Nature Protection Law *Hessisches Gesetz über Naturschutz und Landschaftspflege* (HeNatG)

The valuable and extensive dry sand meadows at Lampertheim LTA are the largest within the entire Rhine-Neckar-Region and thus of state to nation-wide significance.

A substantial part of the Lampertheim Training area has therefore been nominated under the FFH Directive of the EU as a Special Protected Area (SPA) of the NATURA 2000 System.

5.9 FLORA

The studies mentioned under Section 5.8.2, Existing Vegetation also provide information on the flora. They only supply utilizable data for the following locations: Coleman Barracks, Lampertheim Training Area. These studies and their results are discussed in detail in Volume III, Chapter 14.5. The following section therefore provides an overview of the flora that is known to exist on these two installations of the 293rd BSB. Detailed information on the flora of all other locations is not available.

Coleman Barracks

The TES Report for this region contains a list of all vascular plant species for this particular area. It contains 122 plant species including 8 species listed in the Red Data Books and 6 on the early warning list. These threatened or endangered species are all specialists at living on more or less loose sandy soil. Two species are classified as category 2: severely endangered. These are:

Smooth cat's-ear	(*Hypochoeris glabra*)
Spring spurrey	(*Spergula morisonii*)

The numerous mosses and lichens mentioned in the TES Report for the northern dry sand meadow are not listed anywhere else. Future moss and lichen recording and determination should focus on this and other interesting places on the installation, because dry sand meadows usually contain larger numbers of endangered species from these groups than from the vascular plant group.

Lampertheim LTA

The literature data contains a list of all vascular plant species found in this particular area. A total of 141 species is mentioned; 12 of them are listed in the Red Data Books and 15 on the early warning lists. Five species are classified as category 2: severely endangered. These are:

Sand-strawflower	(*Helichrysum arenarium*)
Glaucous hair-grass	(*Koeleria glauca*)
Spanish catchfly	(*Silene otites*)

Spring spurrey	(*Spergula morisonii*)
Wild thyme	(*Thymus serpyllum*)

These most endangered species also require more or less open sandy areas and a dry warm climate. The present ecological condition of the location seems to be stable due to decreased military land use and stop of afforestation. Though there has been a significant reduction in the size of the flora population in the past, the ecological value of the flora of this location is still considered to be of at least statewide importance.

Literature data on mosses and lichens is also not available for this area, although it would probably be of high significance for the floristic valuation of the area.

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5.10 FAUNA

Some of the studies mentioned under Section 5.8.2, Existing Vegetation also provide data on the fauna of Coleman Barracks and Lampertheim LTA. Additional surveys, concentrating on animals only, were carried out:

- PGNU (1994): *Zoologische Begleituntersuchung zur Maikäferbekämpfung in Lampertheim*. Detailed zoological data on several animal groups in Lampertheim Training Area.
- PGNU (1995): *Zoologische Begleituntersuchung zur Schwammspinneruntersuchung im Bereich der Forstämter Mörfelden-Walldorf und Lampertheim*. Detailed zoological data on several animal groups in Lampertheim Training Area.
- Kristal, P. Nässig, W., Zub, P. (1996): *Lepidopterische Begleituntersuchungen zur Schwammspinnerbekämpfung mit Dimilin und Btk im Jahr 1994 im Staatsforst Lampertheim*. Detailed zoological data on butterflies in Lampertheim Training Area
- Haaß, N (1996): *Ergebnisse einer sechsjährigen avifaunistischen Erhebung in den Gebieten "Viernheimer Heide" und "Waldheimat/ Dossen"*. Detailed zoological data on birds in Lampertheim Training Area.
- Tischendorf, S. (1996): *Stechimmen Viernheimer Düne*. Detailed zoological data on feral bees in Lampertheim Training Area.
- LfUG Oppenheim (2002): *Vogelschutzrichtlinie; Datenblätter; Gebietsvorschlag 6514-401 Haardtrand* . Data on rare birds that occur in the general area of the Grünstadt Communication Site. The site is definitely part of the nomination.
- LfUG Oppenheim (2002): *Natura 2000; Datenblätter; Gebietsvorschlag 6313-301 Donnersberg* Data on vegetation, flora, and fauna of the Donnersberg area. Dannenfels Radio Communication Station is definitely included.
- VOGT, C. & FORST, M. (1997*): Gefährdung, Schutz und Entwicklungspotential von Sandrasen im Kreis Bergstraße* – Results of a regional species and habitat protection concept in the "Bergstraße District"

These studies and their results are discussed in detail in Volume III, Chapter 14.5. The following section therefore provides an overview of the fauna that is known to exist on these two installations of the 293rd BSB. Detailed information on the fauna on all other locations is currently not available.

Coleman Barracks

The survey on TES animal species on this installation focused primarily on four animal groups: birds, ground beetles, locusts, and spiders. These groups were surveyed on 4 to 7 individual recording locations representing the most interesting habitat types for these animals. The following results were obtained:

TABLE 5.10.1
NUMBER OF SPECIES PER ANIMAL GROUP
FOUND AT COLEMAN BARRACKS DURING THE TES SURVEY

Group	Total Species	Total Red Data Book	Early Warning List
Birds	45	9	10
Ground beetles	36	10	3
Locusts	10	5	-
Spiders	112	18	-
Additional findings			
Amphibians & Reptiles	3	2	-
Total	**190**	**44**	**13**

This installation only has relatively few different but very specialized habitat types. These numbers show that a relatively large number of species from all animals groups investigated could be identified. Of additional significance is the fact that at least severely endangered species were also found for all groups. Dry sand biotopes are essential for their survival. The area is thus at least of statewide ecological significance from a zoological point of view.

Lampertheim LTA

The latest survey on TES animal species on the land of this installation focused primarily on the same four animal groups as at Coleman Barracks: birds, ground beetles, locusts, and spiders. These groups were surveyed on 8 to 10 individual recording locations representing the most interesting habitat types for these animals. No recordings were carried out in the forests. The following results were obtained:

TABLE 5.10.2
NUMBER OF SPECIES PER ANIMAL GROUP
FOUND AT LAMPERTHEIM LTA DURING THE TES SURVEY

Group	**Total Species**	**Total Red Data Book**	**Early Warning List**
Birds	41	4	10
Ground beetles	20	18	2
Locusts	12	10	-
Spiders	113	29	-
Additional findings			
Amphibians & Reptiles	4	3	1
Total	**190**	**64**	**13**

This installation only has relatively few different but very specialized habitat types. These numbers show that a large number of species from all animals groups investigated could be identified. Of additional significance is the fact that at least severely endangered species were found for all groups here too. Three grasshopper species currently threatened by extinction could even be identified. Dry sand biotopes are essential for the survival of all of these species. The area is thus of nationwide ecological significance from a zoological point of view.

Additional data for this area could be retrieved from several older surveys focusing on birds, beetles, butterflies & moths, bees & wasps, and locusts. The additional species listed in the Red Data Books have been included in Table 5.11.1

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5.11 THREATENED AND ENDANGERED SPECIES

Each state within Germany publishes a list known as the Red Data Book, which identifies threatened and endangered species in that state. In addition, the Federal Office for Nature Protection (*Bundesamt für Naturschutz*, BfN) publishes comprehensive Red Data Books for the whole of Germany, which reflect the situation of species nationally. Table 5.11.1 uses the Red Data Books of Hesse, Rheinland-Pfalz or Baden-Württemberg (H/ RP /BW) respectively and the Red Data Book of Germany (G).

The species identified on all Red Data Books are categorized according to their rarity as follows:

- I Species that are rare to the area usually having their breeding grounds outside the area (for example, migratory birds).
- I* Endangered. - Only breed in this area.
- 0 Extinct species (not recorded for ten years).
- 1 Species threatened by extinction
- 2 Severely endangered species.
- 3 Endangered species.
- 4 Potentially endangered species.
- U Uncertain, situation not clear but probably endangered
- R Rare by natural geographical restriction
- V Early warning list
- § Protected by German law 'Bundesartenschutzverordnung'. Some species, although not on the red list, are protected by law. These laws regulate the collection, import, export, and trade of these species.

These terms are defined in further detail in both the national and state Red Data Books. A list of all recorded Threatened and Endangered Species found on the locations of the 293rd BSB Mannheim is given in Appendix E1.

TABLE 5.11.1
NUMBER OF RED DATA BOOK SPECIES IDENTIFIED AT THE 293rd BSB
(Results of secondary data research)

Group	Red Data Book Species	Category 0, 1, and 2 Red Data Book Species	Importance
Vascular Plants	32	11	National
Fungi	6	4	Regional
Amphibians	2	1	Local
*Birds	31	14	National
Ground Beetles	18	4	Regional
Butterflies & Moths	11	2	Local
Feral Bees & Wasps	5	5	Regional
Locusts	13	6	National
Reptiles	3	1	Regional
Spiders	35	10	Statewide
Xylobiontic Beetles	85	45	Nationwide
Total	**241**	**103**	**National**

Summary:

Due to the lack of comprehensive data for all other locations, only Lampertheim LTA and Coleman Barracks (Airfield) can be defined as highly important from an ecological point of view.

Grünstadt Communication Station is highly likely to be of some significance for birds.

Biotopes of §24 status have been identified within Sullivan Barracks, Taylor Barracks, and Friedrichsfeld QM Services; they give these installations a local to regional ecological significance.

Funari Barracks, Spinelli Barracks, Turley Barracks, and Benjamin Franklin Village are potentially ecologically significant.

The sand biotopes at Coleman Barracks (Airfield) and Lampertheim LTA provide a complex habitat of statewide to nationwide importance for the survival of more than a hundred endangered species for the following reasons:

- Unique geological formations coupled with the occurrence of a rare climate type, combined to form an ideal sand dune landscape with a high degree of biodiversity.
- The different sand biotopes are still of such an extensive size that they enable the survival of sound populations of a large number of plant and animal species which no longer exist in the surrounding land utilized by the civilian population.
- Some military training activities create additional ecological conditions that are favorable to certain species notably amphibians.
- For some years, disturbances by military activities have only been of short duration and low intensity.
- Forestry activities no longer focus entirely on economic return. This is due to the limitations associated with military training activities, as well as an improved insight into ecological values.

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CHAPTER 6.0

OVERVIEW OF NATURAL RESOURCES RELATED REGULATORY REQUIREMENTS

6.1 INTRODUCTION

This chapter gives an introduction to the regulatory obligations placed upon a military installation. Section 6.1 begins by outlining the relationship between military regulations, German law and European legislation. The subsequent sections list or discuss specific regulations and laws. More emphasis is given to Department of Defense (DoD) Instructions, U.S. Army Regulations (ARs) and German law. Comment on European environmental legislation is restricted to an outline of the legislative process and some key examples.

This chapter aims to give: an understanding of the natural resource management obligations placed on an installation; provide a reference list for key DoD and Army regulations and guidance, and give an appreciation of environmental regulation in Germany/Europe. Resource-specific regulatory requirements and documentary guidance are discussed for each management program in Volumes II and III.

The schematic relationship between U.S. law (implemented through DoD instructions and army regulations) and European/German environmental law (and the different implementation levels) is shown in Figure 6.1. The issues of sovereignty arising from the use of land in Germany by the United States is accommodated by two principle initiatives; the Status of Forces Agreements (SOFA) in the North Atlantic Treaty Organization (NATO) – a Ministerial level agreement between the governments of the United States and Germany, and the *Final Governing Standards – Germany* (FGS-G) that intend to combine two national regulatory regimes at a more operational level. The unifying approach of the FGS-G has evolved from Presidential Executive Orders (E.O.) - notably in 1973 E.O. 11752 (1-801)

'*Federal facilities [military installations] outside the United States shall ensure that such construction or operation complies with the environmental protection control standards of general applicability in the host country or jurisdiction*'. NATO SOFA is addressed further in Section 6.4.

The most recent version of the FGS-G (January 2003) state in Section 1-2a. that '*The requirements of this document are the single definitive source of environmental compliance criteria applicable to DoD installations and to U.S. forces activities in Germany. (Component regulations may impose additional policy requirements)*'. In practice, the FGS-G cannot record all criteria and specifications so there is still a requirement for consultation with '*knowledgeable professionals'* and '*German officials*' (Section 1-2e.1). Furthermore, the FGS-G define criteria and standards but do not give specific guidance or prescriptive procedures for achieving compliance. Commanders are free to develop projects and programs to ensure compliance.

The FGS-G standards were developed from comparative analysis of criteria in DoD's Overseas Environmental Baseline Guidance Document (OEBGD) and the main environmental protection standards and practices in Germany. The OEBGD implements DoD Directive 6050.16, 1991, which addresses minimum environmental standards for overseas installations. In addition, regulations are developed by the Executive Agent for the FGS-G. The Executive Agent in Germany is the U.S. Army Europe (USAREUR), which supplement and complement the Final Governing Standards.

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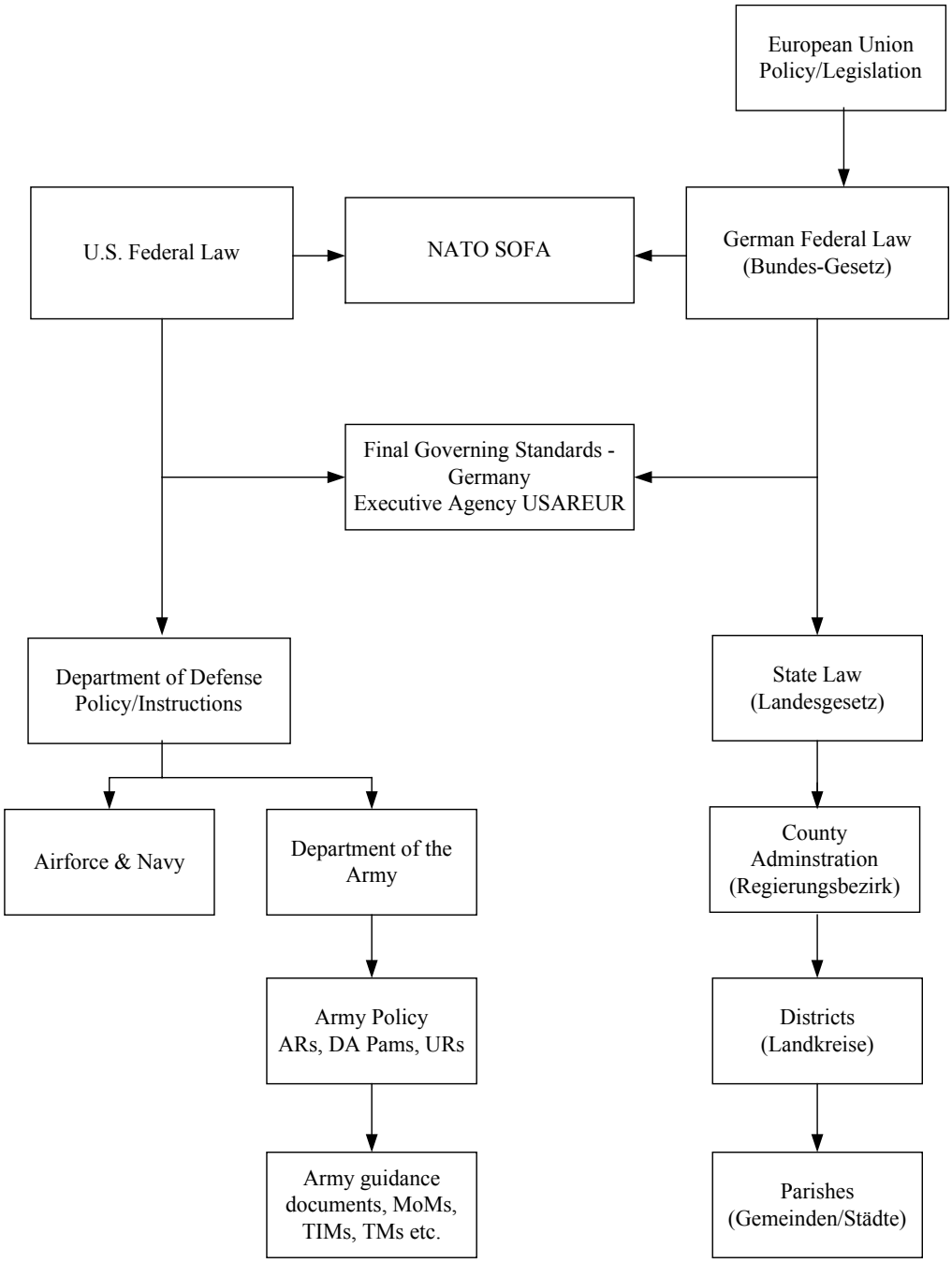
FIGURE 6.1.1

RELATIONSHIP BETWEEN U.S. AND GERMAN LAW.



Note: AR - Army Regulations, DA Pams - Department of the Army, URs - USAREUR Regulations, MoMs - Measures of Merit, TIMs - Technical Information Manuals, TMs - Technical Manuals.

6.2 DEPARTMENT OF DEFENSE AND U.S. ARMY REGULATIONS AND GUIDANCE

6.2.1 Department of Defense Regulations and Guidance

This subsection addresses the E.O.s, White House Memoranda, Department of Defense and ARs which require military installations to address the environment. The following includes many relevant regulations and guidelines but it is not exhaustive and will need updating as policy evolves.

- **Environmental Final Governing Standards Germany**. DoD. (May 1996). The FGS-G provides specific standards for environmental protection for DoD activities and installations in Germany. It implements DoD Directive 6050.16 (DoD Policy for Establishing and Implementing Environmental Standards at Overseas Installations, 20 September 1991). Chapter 13 of the FGS-G - Natural Resources and Endangered Species is the most relevant for the preparation and implementation of INRMPs. Other important chapters include: Chapter 3 - Drinking Water, Chapter 4 – Wastewater and Chapter 11 – Pesticides.
- **Executive Order 12088**. *Federal Compliance with Pollution Control Standards*. (13 October 1978). This Order requires Department of the Army activities to comply with pollution control standards of general applicability to the host country or jurisdiction. It is amended by E.O. 12580 (24/4/87) – Superfund Implementation, E.O. 12777 (18/10/91) – Implementation of Section 311 of the Federal Water Pollution Act of October 18, 1972, and E.O. 13016 (28/8/96).
- **Executive Order 12114**. *Environmental Effects Abroad of Major Federal Actions*. (4 January 1979). This Order furthers the purpose of the National Environmental Policy Act consistent with the foreign policy and national security policy of the United States. It represents the United States government's exclusive and complete determination of the procedural and other actions to be taken by Federal agencies to further the purpose of the National Environmental Policy Act, with respect to the environment outside the United States, its territories and possessions.

- **Executive Order 12962**. *Recreational Fisheries*. (7 June 1995). This Order adds to the duties of Federal Agencies and the Sport Fishing and Boating Partnership Council, and establishes the National Recreational Fisheries Coordination Council. It seeks to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities.
- **Executive Order 13101**. *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*. (14 September 1998). This Order concerns the Federal Government's use of recycled products and environmentally preferable services. It requires each agency to incorporate waste prevention and recycling into their program of operations, and work to increase and expand markets for recovered materials.
- **Executive Order 13112**. *Invasive Species*. (3 February 1999). This Order seeks to prevent the introduction of invasive species, provide for their control and to minimize potential economic, ecological, and human health impacts they might cause. This complements a number of nature protection laws.
- **DoD Directive 4150.7** *DoD Pest Management Program* (22 April 1996). Concerns the training requirements for individuals involved in the application of pesticides. It is concerned with DoD and employees and approved applicators from German States.
- **DoD Instruction 1015.10** *Programs for Military Morale, Welfare, and Recreation* (3 November 1995). Implements policy, assigns responsibilities, and prescribes procedures for operating and managing programs for Morale, Welfare, and Recreation (MWR). It establishes the requirement for installation MWR Programs to maintain mission readiness and productivity through physical fitness, camaraderie/unit cohesion, individual growth/development, and support family well-being and quality of life.
- **DoD Instruction 4150.7** *DoD Pest Management Program*. (22 April 1996). This Instruction implements policy, assigns responsibility, and prescribes procedures for the Department of Defense Pest Management Program. It also authorized the publication DoD 4150.7-M, DoD Pest Management Training and Certification, and DoD 4150.7-P, DoD Plan for the Certification of Pesticide Applicators. It also

designates the Secretary of the Army as the DoD Executive Agent for the Armed Forces Pest Management Board (AFPMB).

- **DoD Instruction 4715.1** *Environmental Security.* (22 April 1996) This instruction implements policy, assigns responsibilities, and prescribes procedures under Section 342(b) below, establishing environmental compliance standards for protection of human health and the environment at DoD installations in foreign countries. This is in accordance with Section 342(b) of Public Law 101-510, National Defense Authorization Act Fiscal Year 1991 (4 November 1990), Executive Order 12344, and the Naval Nuclear Propulsion Program (1 February 1982).
- **DoD Instruction 4715.3** *Environmental Conservation Program* (3 May 1996). This instruction prescribes procedures for the integrated management of natural and cultural resources on property under DoD control. The instruction states, in part, that "environmentally and economically beneficial landscape practices shall be used on all DoD lands.[and], each installation shall, to the extent practicable, use regionally native plants for landscaping and other beneficial techniques". Beneficial Techniques are defined as an array of landscaping techniques that help retain the natural landscape features and native vegetation of undeveloped land (including wetlands, woodlands, and natural drainage features), reduce the need for pesticides and fertilizers, reduce the heating and cooling needs of buildings (shading, windbreaks), and reduce the need for internal combustion engines to drive landscape maintenance equipment. The term also refers to sites designed to incorporate natural drainage approaches, such as swales and vegetated "filter strips," in contrast to storm sewers and artificial drainage channels.
- **DoD Instruction 4715.5** *Management of Environmental Compliance at Overseas Installations*. (22 April 1996). This instruction implements policy, assigns responsibilities, and prescribes procedures, under DoD Directive 4715.1 - Environmental Security, February 24, 1996, establishing environmental compliance standards for protection of human health and the environment at DoD installations in foreign countries. It replaces DoD Directive 6050.16 - DoD Policy for Establishing and Implementing Environmental Standards at Overseas Installations, 20 September 1991.

- **DoD Manual 4160.21-M**. *Defense Reutilization and Marketing Manual*. (23 March 1990). The contents of this manual are applicable to all elements of the DoD, their subordinate commands, installations and activities, worldwide, except as otherwise indicated. It applies to the disposition of excess, surplus and foreign excess personal property, and other property
- **DoD Plan for the Certification of Pesticide Applicators** (13 June 1978). Concerns the training requirements for individuals involved in the application of pesticides. It is concerned with DoD and employees and approved applicators from German States.
- **Under Secretary of Defense (Environmental Security) Memorandum Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds**. (23 September 1994). This memorandum, in response to the White House Memorandum below, suggests that environmentally and economically beneficial landscaping practices be incorporated as standard policy in installation Integrated Natural Resources Management Plans.
- **White House Memorandum**. *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds.* (26 April 1994). This memorandum directs Federal agencies, where cost-effective and practicable, to 1) use regionally native plants for landscaping; 2) promote construction practices that minimize adverse effects on the natural habitat; and 3) prevent pollution by reducing fertilizer and pesticide use and minimizing runoff. Landscaping practices that reduce the use of toxic chemicals provide an effective approach for reaching reduction goals established in Executive Order 12856, Federal Compliance with Right-to-know Laws and Pollution Prevention Requirements, 3 August 1993.

6.2.2 U.S. Army Regulations and Guidance

This section lists important Army and USAREUR regulations which have been produced to implement DoD and other environmental policy. It also contains subsidiary documentation such as Measures of Merit (MOM) and Technical Information Memorandum (TIM).

- **Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys and Integrated Natural Resources Management Plans**. Department of the Army, Installation Management. (21 March 1997). Specifies Army goals and implementing guidance for AR 200-3.
- **AR 40-5** *Preventive Medicine*. (15 October 1990). This regulation addresses the environment from a health and safety perspective. Of particular interest are:
  Chapter 10 - Pest and Disease Vector Control. This covers pest control equipment and devices, aerial dispersion of pesticides, training and certification, etc.
  Chapter 11 - Environmental Quality. This covers wastewater, air quality, hazardous wastes, solid waste, noise, spill control, pesticide monitoring, etc.
  Chapter 12 - Sanitation. This covers drinking water standards including fluorination and chlorinating, and field water supply systems. It also includes guidance on providing an adequate potable water supply, waste disposal, drainage, prevention of soil erosion, and protection of watersheds for recreational areas.
- **AR 200-1** *Environmental Protection and Enhancement*. (21 March 1997). This regulation gives an overview of environmental programs and requirements. It does not provide a complete listing of requirements or detailed guidance on complying with environmental laws and regulations. Readers must therefore consult applicable laws, regulations, and guidance documents referenced in this regulation. This regulation supplements Federal, state, and local environmental laws for preserving, protecting, and restoring the quality of the environment. It also integrates pollution prevention, natural and cultural resources, and the National Environmental Policy Act (NEPA) into the Army Environmental Program.

- **AR 200-2** *Environmental Effects of Army Actions*. (23 December 1988). This regulation sets forth policy, responsibilities, and procedures for integrating environmental considerations into Army planning and decision-making. It establishes criteria for determining which Army actions are required to prepare an Environmental Impact Statement (EIS). Appendix A1 lists applicable category exclusions (CX).
- **AR 200-3** *Natural Resources - Land, Forest, and Wildlife Management*. (25 February 1995). This sets forth policy, procedures, and responsibilities for conservation, management and restoration of land and natural resources on Army lands consistent with the military mission, and in consonance with national laws. The scope includes the conservation, management, and utilization of soils, vegetation, water resources, croplands, rangelands, forests and fish and wildlife species.
- **AR 200-5** *Pest Management*. (25 February 1995). Provides Department of the Army Pest Management Program policies to meet legal compliance requirements in implementing Department of Defense Instruction 4150.7, comply with national policies, and support the military mission.
- **AR 210-20** *Interim Policy and Guidance for Geographic Information Systems (GIS) Technologies.* (16 October 2001) This document provides policy guidance on standards affecting the collection and creation of spatial data within the Department of the Army.
- **AR 210-21** *Army Ranges and Training Land Program*. (2 June1997). Although this regulation is primarily related to range and training operations, it does contain several relevant guidelines such as Section 3.5 - Integrated Training Area Management, Section 5-11 - Hunting, Fishing, and Other Recreational Activities, and Section 5-15 - Installation Compatible Use Zones.
- **AR 350-4** *Integrated Training Area Management*. (8 May 1998). This regulation sets forth the objectives, responsibilities, and policies for the ITAM Program. ITAM establishes procedures to achieve optimum, sustainable use of training lands by implementing a uniform land management program that includes inventorying and monitoring land conditions, integrating training requirements with training land carrying capacity, educating land users to minimize adverse impacts, and providing for training land rehabilitation and maintenance.

- **AR 405-80** *Management of Title and Granting Use of Real Property.* (11 November 1997). This regulation states the policy on management of title, unauthorized use, and granting use of Army controlled Real Property. It consolidates and delegates authority to issue, execute, manage, renew, supplement or revoke outgrants authorizing the use of Army Real Property and to perform certain management activities.
- **AR 420-49** *Utility Services.* (28 April 1997). This regulation establishes policies, criteria, responsibilities, and procedures for facilities engineering responsibilities for utilities management and services. It describes the responsibilities, regulatory requirements, and procedures for providing and managing utilities services at Army installations in a safe, efficient, and environmentally sound manner.

Examples of relevant Measures of Merit for pesticides include:

- **MoM #1**. All DoD installations will have approved Pest Management Plans by 30 September 1997.
- **MoM #2**. 50% reduction in pesticide use at all DoD installations by 30 September 2000, using FY93 usage as a baseline (excludes occupant OTC purchases).
- **MoM #3**. All pesticide applicators at DoD installations must be certified by 30 September 1998.
- **Remote Sensing Users' Guide**. *US Army Environmental Center and US Army Topographic Engineering Center* (February 1997). The U.S. Army Environmental Center and the Topographic Engineering Center published the Remote Sensing Users' Guide in February 1997. The publication provides an organized guide to currently available and near-term remote sensors for land managers. Inexperienced and more advanced users can use the guide as a source of information for remote sensing decision-making.
- **TIM 14** *Protective Equipment for Pest Control Personnel.* (March 1992). This memorandum provides supply and other data necessary to request and effectively use pest management equipment. It also contains a methodology pest management supervisors may use to help determine personal safety equipment requirements.

- **TIM 15** *Pesticide Spill Prevention and Management*. (June 1992). This memorandum forms a basic guideline to develop plans for pesticide spill prevention, control and clean-up. It takes no account of the toxicity and other properties of any chemical, and notes that each pesticide has particular characteristics, which require special attention.
- **TIM 16** *Pesticide Fire Prevention, Control, and Cleanup*. (June 1981). This memorandum presents general standards of good practice to assist installation personnel in the prevention, control and cleanup of fires involving pesticides. This TIM does not supercede or preclude any existing fire prevention procedures.
- **TIM 17** *Pest Control Facilities*. (no date).
- **TIM 18** *Installation Pest Management On-site Reviews*. (no date). This memorandum provides information on installation pest management programs and guidance for evaluation of these programs. It is intended to provide uniformity in DoD installations by promoting a model pest management program.
- **TIM 21** *Pesticide Disposal Guide for Pest Control Workshops*. (October 1986). This memorandum provides guidance on procedures for the minimization and disposition of excess pesticides, pesticide-related wastes, and pesticide containers. Some procedures are mandatory, while others are based on examples of best practice.
- **TIM 24.** *Contingency Pest Management Pocket Guide*. (April 1986). This Guide provides basic guidance about using pesticides in the field, during contingency operations or in military exercises. It is intended to complement the instructions given on the labels of specific listed pesticides. The Guide addresses stock numbers for pesticides available through military supply channels, uses, dosages, application methods and safety issues, together with specific information on vector-borne disease control.
- **TIM 29** *Integrated Pest Management in and around Buildings*. (1994). The memorandum introduces Integrated Pest Management as the use of all appropriate technology and management practices to bring about pest prevention and suppression in a cost-effective and environmentally sound manner.
- **MIL-HDBK-1028/8A** *Design of Pest Management Facilities*. (November 1991). This military handbook provides the criteria and best available technology for

designing a military pest management facility. It provides limited operational rational and promotes compliance with regulatory standards. It can be used as an alternative to TIM17.

- **Army Technical Manual 5-629** *Weed Control and Plant Growth Regulation*. (24 May 1989). Gives guidance related to weed control with and without using herbicides. Specific guidance is given to the technical needs of land managers and grounds maintenance personnel.
- **Army Technical Manual 5-630** *Natural Resources Land Management.* (July 1982). Gives guidance pertinent to natural resources management and integration of land management for installation activities with natural resource management.
- **Army Technical Manual 5-631** *Natural Resources Forest Management.* (December 1981). Identifies management components and personnel needs for managing forest resources. Specific guidance is given to the technical needs of land managers and foresters.
- **Army Technical Manual 5-634** *Solid Waste Management*. (May 1990). This manual discusses managerial, engineering, and operational issues associated with: handling and storage of waste; refuse collection; transfer stations sanitary landfills; volume reduction techniques; resource recovery (material and/or energy); recycling centers at military bases. The Military Construction Codification Act (PL 97-214) of 1982 is also discussed as it applies to recycling programs in the military.
- **Army Technical Manual 5-635** *Natural Resources: Outdoor Recreation and Cultural Values.* (February 1982). Defines resources with recreational value and provides guidance for identifying, classifying, developing, and protecting archeological, historical, geological, botanical, and scenic resources.
- **Army Technical Manual 5-813-3** *Water Supply, Water Treatment.* (16 September 1985). This manual, intended for planners and design engineers, presents information on water quality standards and design criteria for water treatment processes. This manual also establishes criteria to be followed in determining the necessity for and the extent of treatment, and on procedures applicable to the planning of water treatment projects. This manual is applicable to all elements of the Army and Air Force responsible for the planning and design of military construction.

- **DA Pam 200-1** *Environmental Protection and Enhancement* (17 January 2002). This pamphlet explains detailed procedures and methodology to be followed in preserving, protecting, and restoring environmental quality in accordance with AR 200-1.
- **DA Pam 350-4** *Integrated Training Area Management (ITAM), Coordinating Draft* (24 August 1998). This Pamphlet provides detailed information and comprehensive references on the Army's ITAM Program. It provides descriptions of policies and standard operating procedures for the ITAM Program, which is under proponency responsibility of the Headquarters Department of the Army Office of the Deputy Chief of Staff for Operations and Plans. It follows the policy set forth by AR 350-4, which includes objectives, responsibilities, and policies for the ITAM Program. It describes how each of the ITAM components contributes to the overall objectives of sustaining a well-trained and equipped combat force through sound environmental stewardship of natural and cultural resources on lands under the control of the Army.
- **Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities.** U.S. Army Environmental Center. (April 1997). These guidelines are intended to support the policy of preparing and implementing INRMPs as directed by Army Memorandum (21 March 1997), *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan*. The guidelines contain four parts. Part I discusses: goals, compliance, stewardship, requirements of the National Environmental Policy Act (NEPA), INRMP principles and preparation, and the standardization of INRMP. Part II contains an annotated outline for each major chapters of an INRMP. Part III provides a checklist of elements for consideration and inclusion. Part IV is a list of laws that evoke certain conservation actions.
- **Integrated Training Area Management (ITAM) Geographic Information System (GIS) Regional Support Center (RSC) Support Services Pamphlet.** U.S. Army Environmental Center. (November 1998). This pamphlet outlines procedures and support services available from the Integrated Training Area Management (ITAM) Geographic Information System (GIS) Regional Support Centers (RSC's). This pamphlet does not outline the level of GIS support each installation receives; rather it describes the kinds of support provided and the general operation of RSC's.

Installation-specific support tasks will be updated at least annually in coordination with Major Army Commands (MACOMs).

- **Integrated Training Area Management (ITAM) 'How To' Manual Draft.** US Army Environmental Center (February 1998). This How-To Manual provides detailed information and comprehensive references on the Army' s Integrated Training Area Management (ITAM) Program. It provides descriptions of policies and standard operating procedures (SOP) for the ITAM Program. This manual follows the policy set forth by Army Regulation (AR) 350-4, which includes objectives, responsibilities, and policies for the ITAM Program. It establishes the procedures to achieve optimum, sustainable use of training lands, by implementing a uniform land management program. This manual describes how each of the ITAM components contributes to the overall objectives of sustaining a well-trained and equipped combat force through sound environmental stewardship of natural and cultural resources on lands under the control of the Army.
- **Integrated Training Area Management (ITAM) Strategy.** U.S. Army Environmental Center. (August 1995). The ITAM Program is a management and decision-making process to integrate Army training and other mission requirements for land use, with sound natural resource management of land. The purpose of the ITAM Strategy is to provide a standardized description, policies and procedures for the program, and establish a plan for its Army-wide implementation. This document will be superceded by DA PAM 350-4, when it is finalized.
- **Integrated Training Area Management (ITAM) Technology Configuration Management Process Standard Operating Procedure.** U.S. Army Environmental Center. (6 February 1998). This SOP establishes a technology configuration management process to ensure that technological capabilities are developed and used effectively and efficiently in the ITAM program. The objective is to provide technology to the field in support of user requirements for more efficient management of Army training land.
- **LCTA II Technical Reference Manual.** U.S. Army Environment Center (June 1999). This Technical Reference Manual provides scientific and management information for the monitoring of natural resources on Army installations, with

specific emphasis on those lands where training and testing activities occur. The Manual focuses on the inventorying and monitoring of vegetation and biotic communities, soil, and wildlife, and the assessment of changes or trends in resource condition resulting from Army activities. The collection, processing and management of data are described with the aim of interpreting these data correctly to mitigate or solve land management problems and enhance the use of these resources.

- **USAREUR Regulation 200-1** *USAREUR Environmental Quality Program.* (9 December 1993). Prescribes USAREUR policy, responsibilities, and procedures to preserve, protect, enhance, and restore the quality of the environment.
- **USAREUR Regulation 350-220** *Home Station Training Support.* (19 February 1999). This regulation updates policy on home station training available for use by United States Forces throughout USAREUR.
- **USAREUR Regulation 690-80** *Employment of Local National Pest Control Personnel*. (29 December 1988). This concerns the recognition of the qualifications of German pesticide applicators and relates to the Directive 4150.7.
- **USAREUR Supplement 1 to AR 420-46** *Water and Sewage.* (19 January 1984).
- **USAREUR Supplement 1 to AR 200-5** *Pest Management Program.* (22 April 1982).

World Wide Web Resources

Most of the Army Regulations and Guidance documents can be downloaded from the internet.

Army Regulations: http://www.usapa.army.mil/USAPA_PUB_search_P.asp
USAREUR Regulations: https://www.aeaim.hqusareur.army.mil/library/Home.htm
Department of Defense Regulations: http://www.dtic.mil/whs/directives/

For additional information including the compliance responsibilities of the above mentioned regulations see *The Environmental Compliance Assessment System (ECAS), U.S. Army Europe, Volume One USAREUR Protocols.* (USAREUR, 3 April 1995a).

6.3 EUROPEAN COMMUNITY, GERMAN FEDERAL AND STATE LAWS, AND GUIDANCE

6.3.1 European Community Laws and Guidance

Under the original Treaty of Rome, members of the European Community have ceded certain national powers to the supranational European Institutions (notably the European Commission, European Parliament, European Council and ultimately the European Court). With subsequent amendments such as the Single European Act and the Maastrict Agreement, the environmental considerations have become a specific part of the European Union objectives. This means that a significant portion of environmental policy and legislation in European Member States is ostensibly initiated and governed at a European level. The Treaty and amendments permit Member States to adopt stricter environmental standards only where it is not seen as being at odds with the functioning of a European internal market – application of the principle of subsidiary.

European legislative measures can take four forms

- *Regulations*: these are binding on all Member States in their entirety and take precedence over national legislation.
- *Directives*: these are binding on Member States as to the result to be achieved. Member States have some flexibility as to how the measure will be implemented by national and state legislation.
- *Decisions*: these are binding in their entirety and may be addressed to government, private enterprise or individual.
- *Recommendations and opinions*: these are not binding but illustrate the policy agenda.

European environmental law is generally in the form of Directives. Consequently, in Germany the national environmental law must demonstrate that it meets the sentiment of a particular Directive. This need not, however, contain the exact wording of the original and may be accommodated by one or more national laws or regulations. If, for example, Germany cannot demonstrate that her national laws and regulations comply with the sentiment of a particular Directive, then Germany as a country can be prosecuted in the European Court. Whereas at an operational level, prosecution for a legal infringement is an issue for national jurisdictions.

Europe has adopted a large number of environmental laws and regulations in all environmental media – land, air and water. These cover environmental standards, environmental quality objectives, administrative procedures and policy instruments. Important relevant examples include: Directive 79/409/EEC - the 'Birds' Directive, Directive 92/43/EEC - the 'habitats' Directive, and Directive 85/337EEC – concerning environmental assessment.

No European Community regulations are currently incorporated into DoD, U.S. Army, or USAREUR regulations. This process is being undertaken and revised regulations are anticipated.

6.3.2 German Federal and State Laws and Guidance

The adoption and implementation of law in Germany follows a hierarchy to accommodate different administrative levels. The regulation hierarchy is shown in Figure 6.1, thus European law has greater precedence over Federal law, which supercedes State law and so on. In general, laws and regulations tend to become more specific as the legislature becomes more localized. The existence of 16 *Länder* (States) and a strong regional German identity means that examining the effect of European and Federal legislation is complex and resource intensive. As a consequence, knowledge of local as well as national laws and regulations has similar importance.

The following notes the relevant institution for the development and implementation of regulations in Germany.

Bundestag (Lower House of Parliament) this Federal Institution deals with the development of Germany-wide laws, Federal Acts and standards (ordinances). These laws tend to focus on outline principles rather than more detailed legal application, which is dealt with at a lower administrative level.

Landtag/Senat (State Parliament/Senate) this Federal Institution has a membership of representatives from the respective 16 Länder. It examines and amends Federal Acts as proposed by the Bundestag within established guidelines.

Bundesregierung/Bundesministerium (Government/Federal Ministry) the respective Ministries (*Bundesministerium für Ernährung, Landwirtschaft und Forsten* – Nutrition, Agriculture and Forestry, *Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit* - Environment and Nature etc.) develop regulations to implement Federal Acts where necessary. Together with implementation, the Federal Ministry also has regulatory responsibilities.

Landesregierung/Ministerium (State Government/Ministry) develops State Acts and Regulations, which must not exceed the requirements of the Federal Acts. It is also responsible for the development of administrative regulations and standards for lower administrative levels such as Counties.

Bundes-/Landesregierung oder Ministerium (State Ministry) develops administrative regulations.

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Federal Laws and Guidance

- **Bundesartenschutzverordnung (BArtSchG).** *Federal Species Protection Ordinance*. (18 September 1989). This law contains lists of flora and fauna under federal protection and gives regulations regarding import and export of these species.
- **Bundeswaldgesetz (BWaldG).** *Federal Forest Act*. (2 May 1975). Article 45 BWaldG in particular states that nature preservation activities must not interfere with military use.
- **Erlaß des Bundesfinanzministers.** *Decree of the Treasury Secretary.* (28 August 1995). VI A 5-VVG 3300 - 14/95. This "Forest Management Decree" regulates the principles of forest management and its goals in all federal forests.
- **Gesetz über Naturschutz und Landschaftspflege - Bundesnaturschutzgesetz (BNatSchG).** *Federal Nature Conservation Act.* (25 March 2002). The goal of this law is to protect the flora and fauna in their natural habitats with an emphasis on diversity. In particular, paragraph 20c lists all biotope types that may not be destroyed or changed without official sanction.
- **Gesetz zum Schutz vor schädlichen Bodenveränderungen und zur Sanierung von Altlasten – Bundesbodenschutzgesetz (BBodSchG).** *Federal Soil Protection Act.* (17 March 1998). The goal of this federal law is to protect or reinstall the sustainable function of the soil. The key elements are prevention of harmful soil disturbance, remediation of soil and soil contamination, prevention of soil damage and agricultural soil utilization.
- **Gesetz zum Schutz der Kulturpflanzen - Pflanzenschutzgesetz (PflSchG)**. *Plant Protection Act.* (14 May 1998). This plant protection law includes the protection of plants against harmful organisms and diseases, as well as the protection of humans against health effects by the application of agricultural pesticide. It includes regulations for tests and permission.
- **Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreigungen, Geräusche, Erschütterungen und ähnliche Vorgänge – Bundes-Immissionsschutzgesetz (BimSchG).** *Federal Immission Control Act.* (14 May

1990). This law aims to reduce the impact of atmospheric immission, noise and vibration on the human and natural environment.

- **Gesetz zur Förderung der Kreislaufwirtschaft und Sicherung der unweltverträglichen Beseitigung von Abfällen – Kreislaufwirtschaft- und Abfallgetz (KrW-/AbfG).** *Closed Substance Cycle and Waste Management Act.* (27 September 1994). This law requires that disposal of ordinary and hazardous waste is regulated to protect human health and environmental resources. It states that avoidance of waste and recycling are equally important to proper disposal. The law includes the proper disposal of waste oil and requires companies selling oil to accept waste oil for recycling.
- **Gesetz zur Ordnung des Wasserhaushalts - Wasserhaushaltsgesetz (WHG).** *Federal Water Act.* (12 November 1996). This law aims is to protect water bodies as part of the ecosystem and as habitats for plants and animals. Part one (1) gives general guidance for all water bodies and procedures regarding water utilization. Injunctions for water supply, wastewater, and permit procedures are included. Part two (2) applies for surface water, part four (4) for groundwater. In particular, Article 7(a) includes the general request for the discharge of wastewater.
- **Liste der vom Bundesgesundheitsamt geprüften und anerkannten Desinfektionsmittel und Verfahren.** *Federal Public Health Department List of Tested and Approved Substances and Methods for Disinfection.* (March 1984).
- **Liste der vom Bundesgesundheitsamt geprüften und anerkannten Entwesungsmittel und Verfahren zur Bekämpfung tierischer Schädlinge.** *List of tested and recognized / accepted substances and methods for the killing of vermin, parasites and pests (arthropods), published by the Federal Public Health Department.* (July 1986).
- **Protocol of Meeting** concerning Cooperation between U.S. Major Training Area Commanders and the Chiefs of the Federal Forestry Service. (15 December 1983).
- **Rahmen-Abwasser-Verwaltungsvorschrift über Mindestanforderungen an das Einleiten von Abwasser in Gewässer – Rahmen-AbwasserVwV.** *General Administrative Regulation concerning Minimum Requirements for the Discharge of Wastewater into Water Bodies (Mixed Wastewater).* (31 July 1996). This administrative

regulation applies for wastewater with an average load of non-hazardous constituents. Maximum concentrations and limit values are listed in paragraph 2 of the regulation. This regulation is legally binding only for administrative authorities.

- **Rote Liste Deutschland.** *Red Data Book Germany* (1994). This contains lists of species that are endangered and/or threatened in Germany. This is not officially a legal document but it is referred to as a fundamental requirement in Federal and State Acts and Regulations.
- **Umweltverträglichkeitsprüfungsgesetz (UVPG)**. *Federal Environmental Impact Assessment Act.* (5 September 2001). The goal of this law is to guarantee effective environmental prevention according to uniform principles for several projects. The impacts on the environment shall be determined, described and evaluated at an early stage and as comprehensively as possible. The results of an environmental impact assessment may be considered for all administrative decisions according to the permission. Projects that apply for this Act are listed in the attachment to article 3.
- **Verordnung über Trinkwasser und über Wasser für Lebensmittelbetriebe, Trinkwasserverordnung (TrinkwV).** *Water Quality Standards for Drinking Water and Water Used for Food Preparation*. (5 December 1990). This regulation includes the limit values for drinking water and water used for food preparation. Several attachments give guidance for micro-biological examination, limit values for chemical substances, scope and frequency of examination and treatment specifications.

State Laws and Guidance

- **Baden-Württemberg Gesetz zum Schutz des Bodens (Bodenschutzgesetz – BodSchG)** *Soil Protection Act* (24 June1991) The aim of this State law is to protect or reinstall the lasting function of soil. Goals of this law are described under BBodSchG.
- **Baden-Württemberg Ordnungsbehördliche Verordnung über die Selbst-überwachung von oberirdischen Deponien (Deponieselbstüberwachungs-verord-nung – DepSüVO).** *Regulation concerning Self-Monitoring of Landfill Sites*. (2 April 1998) This regulation on self-monitoring of non-covered landfill sites in Baden-Württemberg states limits, permitting and monitoring procedures.
- **Baden-Württemberg Verordnung des Ministeriums für Umwelt und Verkehr über das Einleiten von Abwasser in öffentliche Abwasseranlagen (Indirekt-einleiterverordnung – IndVO).** *Regulation of the Ministry for Environment and Traffic concerning the Discharge of Wastewater in Public Wastewater Treatment Plants*. (19 April 1999) Baden-Württemberg regulation concerning the discharge of wastewater into public sewers and wastewater treatment plants according to article 45 k of the State Water Act.
- **Baden-Württemberg Verordnung des Umweltministeriums über Anlagen zum Umgang mit wassergefährdenden Stoffen und über Fachbetriebe (Anlagen-verordnung – VawS)** *Baden-Württemberg Ordinance concerning Facilities for the Storage, Filling, and Transportation of Substances Hazardous to Waters and the Permission of Special Operations* (11 February 1994). This section of the Baden-Württemberg Water Act defines facilities and installations dealing with substances hazardous to water with respect to Article 19 g, paragraph 1 and 2 of the WHG (Water Management Act).
- **Baden-Württemberg Verordnung über die Beseitigung pflanzlicher Abfälle außerhalb von Abfallbeseitigungsanlagen Pflanzen-Abfall-Verordnung.** *Regulation on the Disposal of Green Waste outside of Waste Disposal Plants.* (30 April 1974, modified 12 February 1996) The regulation gives guidance on the disposal or reuse of green waste outside of waste disposal plants, and lists the responsible authorities.

- **Baden-Württemberg Verordnung des Umweltministeriums über die Eigenkontrolle von Abwasseranlagen (Eigenkontrollverordnung – EigenkontrollVO)**. *Regulation of the Ministry of Environment on the Self-Monitoring of Wastewater Treatment Plants.* (9 August 1989) Regulation for self-monitoring of wastewater treatment plants. This Regulation exercises paragraph 6 of article 83 of the Baden-Württemberg water law. It concerns monitoring and record keeping requirements and provides the limit values in the attachments.
- **Gesetz über die Erkundung, Sicherung und Sanierung von Altlasten (Hessisches Altlastengesetz – HAltlastG)** *Act for the Investigation, Risk Minimization and Redevelopment of Contaminated Sites* (20 December 1994). The Law identifies how to evaluate potentially contaminated sites, how to assess the level of contamination and the monitoring requirements to prevent or reduce the negative impacts of land redevelopment.
- **Hessisches Gesetz über die Erhebung einer Abgabe für Grundwasserentnahmen (Hessenisches Grundwasserabgabengesetz – HGruwAG)** *Hessen Act for the charging for Groundwater Use*. (17 June 1992). This law aims to regulate and protect the groundwater by charging for groundwater consumption. It qualifies the charging categories and the responsible permitting authority. This Law is in accordance with the Federal Water Management Act and the Hessen Water Act.
- **Hessisches Ausführungsgesetz zum Kreislaufwirtschafts- und Abfallgesetz (HAKA).** *Hessen Act to the Execution of the Federal Act on the Avoidance and Elimination of waste*. *(23 Mai 1997)* The law gives guidance regarding the rights and responsibilities for the avoidance and elimination of waste in Hessen in accordance with the Federal Law on the Avoidance and Elimination of waste.
- **Hessisches Ausführungsgesetz zum Abwasserabgabengesetz (HAbwAG).** *Hessn Act to the Execution of the Federal Wastewater Fee Act.* (17. Dezember 1980) The law gives guidance concerning the charging regime, how these funds can be spent, and the associated regulatory responsibilities for the wastewater fees in Hessen. This is in accordance with the Federal Wastewater Fee Act.
- **Hessische Verordnung über die Bestimmung der zuständigen Behörden nach dem Bundes-Bodenschutzgesetz.** *Hessen Regulation to the Responsible Authority*

executing the Federal Soil Protection Act. 9 March 1999. This regulation identifies the responsible authorities and how these should execute the Federal Soil Protection Law.

- **Hessische Verordnung über die Zuständigkeit der Wasserbehörden.** *Regulation identifying Water Authority responsibilities* (21 August 1997) This regulation is the specification of article 94 of the Hessen Water Law. It lists the measurements and thresholds for which permitting issues must be by the Hessen Higher Water Authority.
- **Hessisches Gesetz über Naturschutz und Landschaftspflege (HNatSchG)** *Nature Protection and Care of Landscape Act of Hessen*. 19 December 1994. This law has similar principles as BNatSchG but applies more to landscape and urban countryside issues. Its goal is to protect, preserve and develop: natural and cultural landscapes; landscape units as habitat for flora and fauna; areas for recreation and land for agricultural use.
- **Hessische Verordnung zur Regelung von Zuständigkeiten nach dem Bundes-Immissionsschutzgesetz.** *Regulation to the Responsibility according to the Act to Reduce the Impact of Air Pollution, Noise Pollution and Vibration* (22. August 1997). The eleven articles of this regulation define the responsible authorities and the permitting procedures.
- **Hessisches Wassergesetz (HWG).** *Hessen Water Act. (*22. January 1990) Gives guidance regarding the rights and responsibilities for water use in Hessen. The goals of this Law are described in the Federal Water Management Act.
- **Landeswaldgesetz Rheinland-Pfalz** *Forest Act of Rheinland-Pfalz* (30 November 2000). The goal of this law is to conserve forests and their status; to produce timber and other natural products; and to preserve forests as a public recreation facility in the State of Rheinland-Pfalz. Goals of this law are described under BNatSchG.
- **Landespflegegesetz Rheinland-Pfalz (LPflG)** *Landscape Conservation Act of Rheinland-Pfalz* (30 November 2000). The principles of this law are similar to those of the BNatSchG, but it applies more to landscape and urban countryside issues. Its goal is to protect, preserve and develop natural and cultural landscapes, landscape units as habitat for flora and fauna, areas for recreation and land for agricultural use.

- **Naturschutzgesetz Baden-Württemberg (NatSchG)** *Nature Conservation Act of Baden-Württemberg. (* 29 March 1995). The principles of this law are similar to those of the BNatSchG, but it applies more to landscape and urban countryside issues. Its goal is to protect, preserve and develop natural and cultural landscapes, landscape units as habitat for flora and fauna, areas for recreation and land for agricultural use.
- **Rote Liste Hessen.** *Red Data Book Hessen*. Contains lists of plant and animal species which are endangered and/or threatened in Hesse.
- **Rote Liste Baden-Württemberg.** *Red Data Book Baden-Württemberg*. This contains lists of endangered and/or threatened plant and animal species in Baden-Württemberg.
- **Rote Liste Rheinland-Pfalz.** *Red Data Book Rheinland-Pfalz*. This contains lists of endangered and/or threatened plant and animal species in Rheinland-Pfalz.
- **Rheinland-Pfälzische Landesverordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen und über Fachbetriebe (Anlagenverordnung – VawS).** *Rheinland-Pfalz Ordinance concerning Facilities handling Substances Hazardous to Waters and the Permission for Special Operations.* (1 February 1996). This part of the Rheinland-Pfalz Water Act defines facilities and installations dealing with substances hazardous to water in respect of Article 20, paragraph 5 of the LWG (State Water Act).
- **Waldgesetz für Baden-Württemberg (LWaldG)** *State Forest Act* (31 August 1995) The goal of this law is to conserve forests and their status; to produce timber and other natural products; and to preserve forests as public recreation facility in the State of Baden-Württemberg. Goals of this law are described under BNatSchG.
- **Wassergesetz für Baden-Württemberg (WG).** *Water Act Baden-Württemberg*. (1 January 1999) This act gives guidance regarding the rights and responsibilities for water use in Baden-Württemberg. The goals of this act are described under the Federal Water Management Act.
- **Wassergesetz für das Land Rheinland-Pfalz (Landeswassergesetz – LWG).** *State Water Act*. (14 December 1990). This act gives guidance regarding the rights and responsibilities for water use in Rheinland-Pfalz. The goals of this act are described under the WHG (Federal Water Management Act).

World Wide Web Resources

German Federal Laws: http://www.bundesregierung.de/Gesetze/-,7214/Gesetze-A-Z.htm
German Environmental Laws and Guidance: http://www.umwelt-online.de/ (registration required)

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6.3.3 German Community Regulations and Guidance

- **ABSP Arten- und Biotopschutz Programm Baden-Württemberg** *Species and Biotope Protection Program.* Specific to the county of Mannheim (ABSP) A separate program is available for each Baden-Württemberg County. The program provides advice regarding the occurrence of important species and habitats, and makes recommendations for their conservation.
- **ABSP Arten- und Biotopschutz Programm Rheinland-Pfalz** *Species and Biotope Protection Program.* (ABSP) A separate program is available for each Rheinland-Pfalz County. The program provides advice regarding the occurrence of important species and habitats, and makes recommendations for their conservation.
- **Satzung über die öffentliche Abwasserbeseitigung Mannheim (Abwassersatzung – AbwS)** *Statute on the public waste water disposal* (18 December 2001). This regulation defines the threshold values for wastewater discharge into public wastewater treatment plants.
- **Verordnung des Bürgermeisteramts Mannheim als untere Naturschutzbehörde über das Landschaftsschutzgebiet "Käfertaler Wald".** *Regulation of the landscaoe preserve area "Käfertaler Wald"* (14 October 1975). This decree comprises policies to prevent degradation or alteration of the existing ecosystems within the nature preserve.

6.4 NORTH ATLANTIC TREATY ORGANIZATION STATUS OF FORCES AGREEMENT (NATO SOFA)

SOFA is the legal agreement between the parties of NATO, established on 4 April 1949, by which the Forces of one party may be sent, by agreement, to serve in the territory of another party. Under the original NATO SOFA, sending states were obligated to 'respect' host nation law, which was generally interpreted as being less than 'obey'. This general agreement is amended to accommodate changing circumstances by Supplemental Agreements (SAs). On 29 March 1998, a SA came into force, which placed a new obligation on the U.S. Army to comply with many of the procedural requirements of German Law (particularly obtaining certain permits and the environmental impact assessment process).

The new articles to the SA now imply that the sending states must 'obey' German Law. There are several articles that impact the way natural resources are managed. Summaries of the most significant Articles with respect to the INRMP are provided below as general guidance.

- **Article 45** - *Maneuvers and Other Training Exercises:* The conduct or participation in maneuvers and other training exercises in accordance with this Article by elements of a force which come to the Federal Republic for this purpose shall require the approval of the relevant German authorities. The conduct of maneuvers and other training exercises, in accordance with this Article, shall be governed by the relevant provisions of German law, in particular the Federal Requisitioning Law of September 27, 1961, as amended.
- **Article 49** - *Construction:* Construction works shall be carried out by the German authorities responsible for Federal building in accordance with German legal provisions and administrative regulations in force, and in accordance with special administrative agreements. Notwithstanding the last sentence, the authorities of a force and of a civilian component may carry out, in consultation with the German authorities, repairs and maintenance work, construction which require special security measures, very minor construction works (and in agreement of German authorities), minor construction works, exceptional construction works in other cases with their

own personnel or by placing contracts direct with contractors. In carrying out such works, the authorities of a force or civilian component shall respect German building and environmental regulations and shall ensure, in cooperation with German authorities, that the necessary permissions are obtained.

- **Article 53 -** *Rights Respecting Installations:* German law shall apply to the use of installations except as provided in the present agreement and other international agreements. Cooperation between the force and the German authorities in accordance with this Article shall extend in particular to environmental protection (including sites rendered hazardous by soil contamination), basic preservation of land and buildings, forestry operation, hunting, shooting, and fishing.
- **Article 53A -** *Special Permits and Licenses in Connection with Use of Installations:* This Article requires sending states to obtain permits, licenses or other forms of official approval for activities within an accommodation if required by law. Facilities and activities which were in existence on 29 March 1998 and which normally would require a permit may continue to operate without a permit. However, those activities must be reported through the Federal authorities to the authorities responsible for enforcement of the respective law no later than 29 March 1999.
- **Article 54 -** *Health and Sanitation:* This Article requires sending states to comply with German regulations and procedures for the prevention and control of infectious diseases of humans, animals, and plants as well as for the prevention and control of plant pests. A force and civilian component may apply its own regulations and procedures in the areas referred to in the preceding sentence provided that neither public health (*öffentliche Gesundheit*) nor the cultivation of plants is endangered.
- **Article 54A -** *Environmental Protection:* The authorities of a force and of a civilian component shall examine as early as possible the environmental effects of environmentally significant projects on persons, animals, plants, soil, water, air, climate and landscape including interactions among them, as well as cultural and other property. The objective of the examination shall be to avoid environmental impacts and, where detrimental effects are unavoidable, to offset them by taking appropriate restorative or mitigating measures. The assistance of German civil and military authorities may be used.

- **Article 54B** - *Fuels, Lubricants, and Additives:* The authorities of a force and of a civilian component shall ensure that only fuels, lubricants, and additives that are low-pollutant in accordance with German environmental regulations are used in operation of aircraft, vessels, and motor vehicles, insofar as it is compatible with their technical requirements.

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CHAPTER 7.0

NATURAL RESOURCES PROGRAM

STRUCTURE AND RESPONSIBLE PARTIES

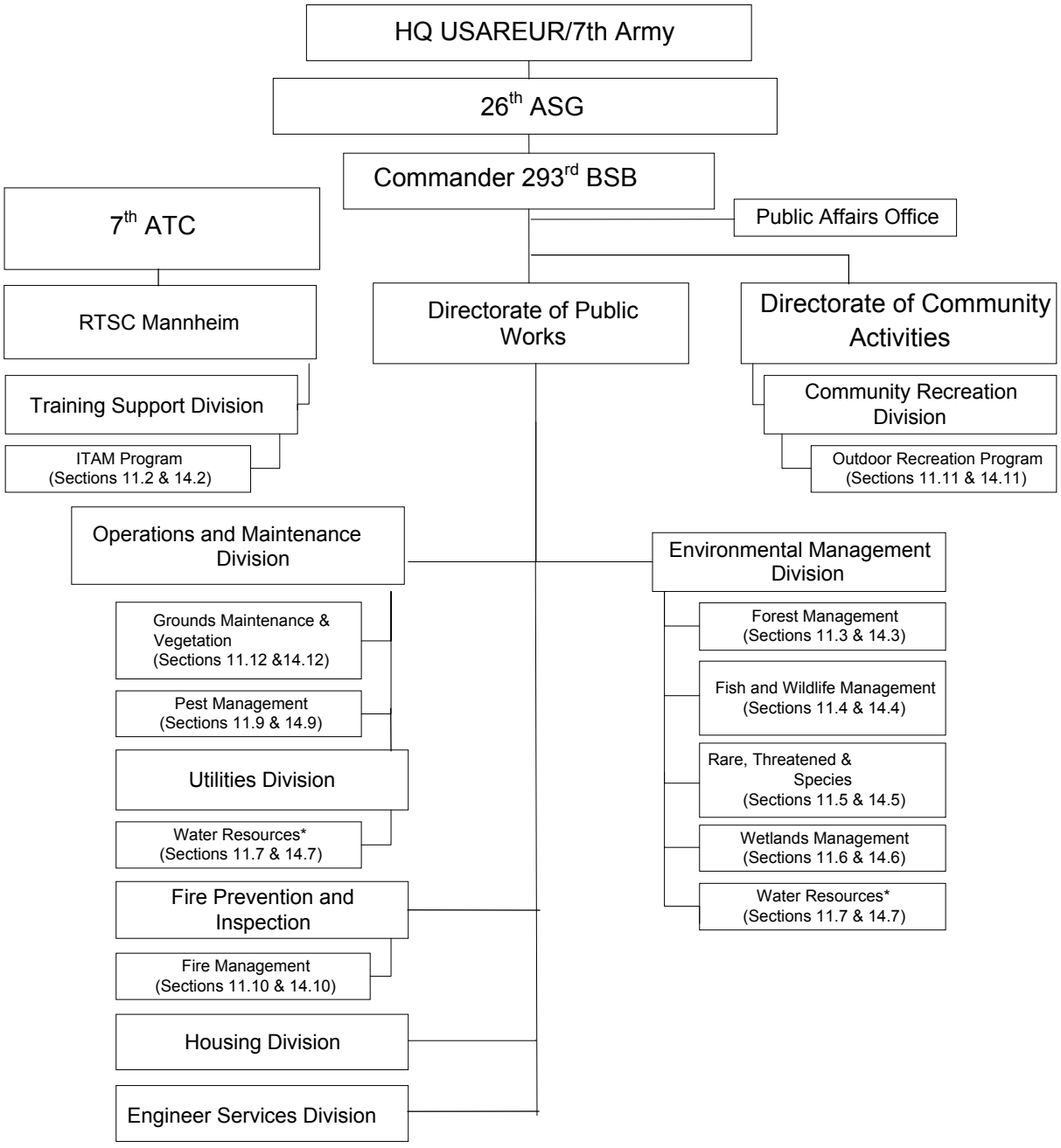
7.1 INSTALLATION ORGANIZATIONS

The Environmental Management Division (EMD) has primary responsibility for implementation of the INRMP at 293rd BSB Mannheim. EMD is a division within the Directorate of Public Works (DPW), one of the main staff elements of 293rd BSB Mannheim. As shown in Figure 7.1.1, other branches of the Directorate of Public Works and the Directorate of Community Activities share responsibility for implementation of various activities addressed by the INRMP.

Natural resources management programs are divided into two major categories: Environmental Resources Management and Integrated Training Area Management (ITAM). Responsibility for the management of the individual programs falls mainly to the branches of the DPW with the exception of the ITAM program, which is under the responsibility of the 7th ATC, and the Outdoor Recreation Program, which is under the responsibility of the Directorate of Community Activities (DCA).

FIGURE 7.1.1

ORGANIZATION CHART FOR NATURAL RESOURCE MANAGEMENT PROGRAMS



7.2 OTHER DEFENSE ORGANIZATIONS

The Army Corps of Engineers, Europe District provides technical, project management, and contracting support to 293rd BSB Mannheim EMD. In addition, technical support is provided by HQ USAREUR. Currently, no other defense organizations are directly involved with the implementation of the INRMP.

7.3 GERMAN AGENCIES

Various German federal and state agencies are responsible for management of certain resources that are addressed in the INRMP .With the exception for Lampertheim LTA, which is managed by the Hessen State Forest Service, the responsibility for all other forestry on the 293rd BSB rests with the Federal Forest Service (*Bundesforst*). For a more detailed explanation of their role refer to Volume II, Section 11.3 and Volume III, Section 14.3. The Federal Assets Office (Bundesvermögensamt) serves as the representing agency for the landowners within the boundaries of the 293rd BSB, and is therefore the main partner for U.S. personnel in dealing with other State, County and City authorities and with private persons.

According to BImSchG (Bundesimmissionsschutzgesetz, 20 October 2001), certain facilities need approval prior to their initial operation. Depending on the type of facility, responsibilities lie with the following agencies: The respective District Council (*Regierungspräsidium*), the federal industrial inspectorate (*Staatliches Gewerbeaufsichtsamt*) and the lower administrative authorities (*Untere Verwaltungsbehörden*). However, for the U.S. Army installations, the Bundeswehr regional administrative centers (*Wehrbereichsverwaltung*) take on the responsibilities of the *Gewerbeaufsichtsamt*. In addition, the Landesamt für Arbeitsschutz and technische Sicherheit is responsible or surveillance and monitoring of these facilities.

The Bundeswehr administration (Bundeswehrverwaltung) consisting of regional administration centres (*Wehrbereichsverwaltung - WBV*) and at the lowest level of individual base management (*Standortverwaltung - StOV*) administer individual properties and military facilities on behalf of the Federal Defense Department (*Bundesministerium für Verteidigung -*

BMVg). For example, the Bundeswehr had to approve the safety measures outside the TCT range in the Lampertheim Training Area prior to initial operation.

7.4 UNIVERSITIES

In the past, various universities from the U.S. and Germany have provided natural resources technical support to many USAREUR installations. However, universities are not directly involved with the implementation of the INRMP at the present time. Universities could possibly be used as contractors or subcontractors in the future.

7.5 CONTRACTORS

Contractors are used by the 293rd BSB Mannheim to provide assistance with a variety of natural resources projects. Projects are advertised by the Regional Contracting Office (RCO) in Seckenheim. For example, contractors currently provide the following support:

- Threatened and endangered species surveys as part of the Rare, Threatened and Endangered Species Management Program;
- Landscaping and renovation as part of the Buildings and Grounds Maintenance Program;
- Tree surveys/inventories**.**

In the past, contractors were used for the windmill wetland biotope project at Taylor Barracks, a wetlands project at Coleman Barracks and various other smaller ecological projects in cooperation with the EMD.

CHAPTER 8.0

LAND USE AND MANAGEMENT UNITS

8.1 INTRODUCTION

This section describes lands uses and land management units at the 293rd BSB Mannheim. The installation has 17 sites, which support multiple uses and a variety of users. Both the U.S. Army and the host nation are responsible for land use management, and land uses overlap one another in many instances. Consequently, several types of land management units have been used to classify the installation.

8.2 LAND USES

The installation is divided into two broad areas of land use: (1) cantonment area and (2) training area. Real Property records show 15 cantonment areas totaling 1,487 acres (605.5 ha) and one training area totaling 4,087 acres (1,665 ha). These are listed in more detail in Tables 8.3.1 and 8.3.2.

8.2.1 Land Uses in Cantonment Area

The cantonment areas consist of approximately 1,487 acres (605.5 ha). Land uses in the cantonment areas include administration, housing, community facilities, outdoor recreation, industrial, medical facilities, radio sites, equipment maintenance, an airfield and storage.

8.2.2 Land Uses in Training Area

The training area at 293rd BSB Mannheim supports multiple land uses and encompasses 4,087 acres (1,665 ha). The training area is primarily used for bivouac and camouflage training, but also used for vehicle training and dismounted training. Two facilities have shooting ranges. Four areas are used as helicopter landing zones. A small part of the area is used by John Deere as a tractor testing area. Additional land uses include commercial forestry and hunting, both of which are under the responsibility of the State Forestry Agency (Landesforstamt). The Landesforstamt fences in areas that were recently planted or seeded; they are off-limits to all training.

8.3 LAND MANAGEMENT UNITS

Several types of land management units exist at the 293rd BSB Mannheim due to the variety of land uses and the fact that the U.S. Army and the host nation share management responsibility. The 293rd BSB Mannheim can be divided into three principle land management units: improved grounds, semi-improved grounds and unimproved grounds. These are listed in Tables 8.3.1 and 8.3.2 for all of the associated areas. Some of the installations were excluded from the classification. The size of each location was obtained from real property records; details are provided in Chapter 2.

Improved grounds are defined as those lands on which intensive maintenance activities must be planned and performed annually as fixed requirements. All of the improved grounds at the 293rd BSB Mannheim are located in the cantonment areas and make up approximately 4.7 % of the installation. Semi-improved grounds are those areas where periodic, recurring maintenance is performed but to a lesser degree than on improved grounds. Approximately 4.0 % of the installation consists of semi-improved grounds. Unimproved grounds include areas requiring limited or no maintenance. The majority of the installation consists of unimproved grounds (91.3 %). Details on grounds maintenance activities associated with each category are provided in Volume II, Chapter 11.12.

TABLE 8.3.1

GROUND CLASSIFICATIONS AT THE 293rd BSB MANNHEIM

FOR THE CANTONMENT AREAS

(For clarity values have only been given in hectares)

Location	Grounds Classification (ha)			Total
	Improved	Semi-improved	Unimproved	
Benjamin Franklin Village	36.43	1.50	45.01	82.94
Coleman Bks.	49.17	58.91	125.19	233.27
Dannenfels Comm. Sta.	N/A			
Edigheim Beacon Site	N/A			
Friedrichsfeld QM Services	0	2.38	11.77	14.15
Friedrichsfeld Store Area	0	0	6.87	6.87
Funari Bks.	1.20	1.91	8.03	11.15
Grünstadt AAFES	N/A			
Grünstadt Comm. Sta.	N/A			
Mannheim Class III Point	N/A			
Spinelli Bks.	1.47	11.24	69.02	81.73
Sullivan Bks.	8.28	8.18	33.62	50.08
Taylor Bks	5.97	2.31	37.27	45.55
Turley Bks.	1.95	0.60	10.48	13.03
Worms Auto Strip Yard	N/A			

TABLE 8.3.2

GROUND CLASSIFICATIONS AT THE 293rd BSB MANNHEIM FOR THE

TRAINING AREA

(For clarity values have only been given in hectares)

Location	Grounds Classification (Hectares)			Total
	Improved	Semi-improved	Unimproved	
Lampertheim TA	0	0	1665	1665

8.3.1 Land Management Units in Cantonment Area

The cantonment area consists of the following principle land management units:

- Improved grounds – 258.15 acres (104.47 ha) [18.84 %]
- Semi-improved grounds – 218.20 acres (88.30 ha) [15.92%]; and
- Unimproved grounds – 893.84 acres (361.73 ha) [65.23%].

Secondary land management units within the cantonment can be identified for grounds maintenance purposes. These units include: developed areas (e.g., buildings, roads, other paved areas, etc.), landscaped areas, and mowed areas (based on frequency of required mowing). Landscaped areas and mowed areas are discussed in more detail in Volume II, Section 11.12.

8.3.2 Land Management Units in Training Area

The entire training area is classified as unimproved grounds. Maintenance activities are performed as needed to protect the environment and sustain realistic and safe training conditions.

Additional land management units have been established based on land uses and environmental conditions. These management units include "environmentally sensitive areas," that have been designated for various purposes and are off-limits to most activities. Such areas are marked by signs that prohibit access and designate them as endangered species habitat.

A proposal, suggesting that three areas within the Training Area be designated as FFH preserve areas, is currently being reviewed at the District Administration of the Landkreis (County) Bergstrasse.

8.3.3 Forest Management Districts

The Federal Forest Service (Bundesforst) is responsible for nearly all forest management activities at the 293rd BSB. Only Lampertheim Training Area is located on land of the State of Hesse. Other public or private owners are not relevant.

The Bundesforstamt (Federal Forest Service) is responsible for forest management on all land owned by the Federal Republic of Germany. This service is divided into three Forest Inspection Regions (Forstinspektionen) and these are sub-divided into thirty-six Forestry Offices (Forstämter). Individual Forestry Offices are sub-divided into several Forest Districts (Forst Reviere). The Bundesforstamt Bad Kreuznach, represented by the Federal Forestmeister Mr. Rodach, is the Federal Forest Office responsible for the installations of 293rd BSB Mannheim. An inspection of urban trees is conducted annually, and attended by the Bundesförster (District Forester), who provides recommendations for the required safety measures. The funding and implementation of these activities rests with the U.S. Army. Closed forest stands are very rare on federally owned installations.

The State Forest Service is responsible for managing the extensive forested areas at Lampertheim Local Training Area. Mr. Schepp, Superintendent of the State Forest Office Lampertheim, is the responsible forester. He manages approximately 1,400 ha of forested land at the LTA.

Specific details on the Forest Management Program are provided in Volume III, Chapter 14.

CHAPTER 9.0

GEOGRAPHIC INFORMATION SYSTEMS

9.1 RESPONSIBILITIES AND POINTS OF CONTACT

Geographic Information Systems (GIS) implementation at 293rd BSB Mannheim is not organized like other U.S. Army programs. The decision to implement GIS is left to the individual offices depending on available funding. Currently, there is an initiative by the O&M division to implement data from the tree inventory into a GIS. Ground Maintenance plans are also available in a GIS format. There is currently no other GIS in use within the 293rd BSB Mannheim.

TABLE 9.1.1
RESPONSIBILITIES AND POINTS OF CONTACT

Activity	Responsible Individual/Entity
USAREUR Regional Support Center - GIS Support Services	Mr. Gerhard Löffler, USAREUR
GIS Support for ITAM projects	Mr. Nate Whelan, 7th ATC Grafenwöhr
GIS Data/Project Management	Mr. Scott Holbrook, USAREUR
Network Administration & Intergraph Product Support	

9.2 SYSTEM DESCRIPTION

Most of the spatial data currently available at the 293rd BSB is available in Microstation format. The current available database includes detailed grounds maintenance management plans of each installation. Limited data exists in ArcView format, mainly provided by contractors, such as tree inventory data. Georeferenced orthophotos of the 293rd BSB installations are also available.

9.3 FUTURE PLANS

The implementation of GIS in the DPW is still in its very initial stage. The second step - after purchasing the software - is to train the personnel in the application of Geographic Information Systems. The overall goal is to make spatial data available and accessible in an exchangeable format for a wide range of users. The GIS database will be an important planning tool for a number of units within the BSB.

TABLE 9.3.1
GIS PROJECTS ONGOING OR CURRENTLY SCHEDULED

Year	Project Name	Description	GIS Platform
2003	Setup of a GIS	A Geographic Information System is to be set up and personnel trained to be qualified for GIS data implementation	ArcView

9.4 STANDARD OPERATING PROCEDURES

GIS technology has advanced constantly during the last few years. Only recently, an interim policy and guidance memorandum for Geographic Information Systems (GIS) technologies was released by the Department of the Army as a supplement to the Army Regulation concerning Master Planning for Army Installations (AR 210-20). The goal is to increase data compatibility, eliminate redundant GIS efforts, and integrate installation GIS databases and applications across the Army into an enterprise system. Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE, formerly Tri-Services Spatial Data Standard TSSDS), developed by the Standards Working Group of the CADD/GIS Technology Center, provide the necessary standards for geospatial table structure, nomenclature, attributes, and symbology to allow for data integration. SDSFIE has been adopted by the American National Standard Institute's (ANSI) Committee for Information Technology standards and is therefore the prevalent spatial data standard throughout the United States. The SDSFIE is currently the only "nonproprietary" GIS data content standard designed for use with the predominant commercially available off-the-shelf GIS and CADD such as ESRI ArcView; AutoCAD and Bentley MicroStation, and relational database software (e.g., Oracle and Microsoft Access). This nonproprietary design, in conjunction with its universal coverage, has propelled the SDSFIE into the standard for GIS implementations throughout the Department of Defense (DoD),

Using these standards, spatial data can also be implemented into the Geographic Information System Repository (GIS-R), an effort by the Department of the Army to compile worldwide military, government, commercial and installation data sources and provide them to a wide range of users through an easy to use, web based interface. The 293rd BSB Mannheim will comply with the official data standards to enable an exchange of geospatial data.

9.5 MANAGEMENT GOALS, OBJECTIVES, AND RESOURCES REQUIRED FOR IMPLEMENTATION

GIS Goal # 1 – Conduct a BSB wide GIS needs assessment

Although a variety of Geographic Information System products has been available for decades, no uniform standard has yet been established among the wide range of users. A lack of acceptance, reluctance to innovative methods and a poor comprehension of the possibilities and limitations of GIS applications have prevented Geographic Information Systems from becoming an established tool. In the past few years, however, GIS technology has developed rapidly and created a variety of new areas of application.

It is thus imperative that potential GIS users are well prepared before setting up a GIS system. A detailed needs assessment and analysis of technical requirements are the critical first steps. Such a system analysis not only has to take future technical innovations into consideration, but also possible fields of application within the BSB. A detailed preliminary assessment will help to prevent misdirected investments.

It is recommended that all DPW divisions and branches, as well as the Training Support Division are included in this coordinated preliminary study to cover all potential spatial data processors. The following steps should be taken:

- Identify the GIS related needs of all divisions handling spatial data,
- Generic overview of all spatial data currently available at the 293rd BSB,
- Analyze the information flow and possible redundancies of spatial data collection and processing within the BSB and between the BSB and other related authorities such as 26th ASG and USAREUR,
- Draft general guidance for BSB-wide GIS utilization as regards organization, technology and management,
- Draft a proposal for a comprehensive system of data collection, administration and processing,

- Assessment of potential commercial, military and governmental software products that could support the BSB's needs,
- Analysis of manpower requirements and designation of staff and/or departments for GIS set-up and support, and
- Analysis of technical requirements and recommendation of supplementary equipment needed.

Objectives

1. Standardization of spatial data processing,
2. Improvement of adjustment, compatibility and access to spatial data within the BSB as well as between the BSB and other authorities involved (ASG, USREUR, USACE),
3. Avoidance of data redundancies, thus improving data reliability: the database will be kept up to date and only maintained by the designated responsible party,
4. Standardization of data storage and data output formats,
5. General advantages over current conditions, particularly as far as a higher data transparency, time saving and a long-term cost saving effects are concerned.

Resources Required for Implementation

In-house Staff: In-house staff should be utilized to complete this goal. Estimated Effort: 12-18 months.

Contractors: A contractor can be utilized to achieve this goal. This coordinator will assist the DPW staff to decide how to process and administer spatial data and whether it will be managed centrally or by each department.

Equipment: No equipment needed to complete this goal.

Materials: No anticipated material requirements are needed to complete this goal.

GIS Goal # 2 – Provide software and hardware equipment to DPW staff

Two GIS application licenses (ESRI ArcView 3.2) are currently installed in the Master

Planning Division. These workstations do not suffice to meet the needs for extensive future BSB-wide use of GIS. Therefore, additional software licenses need to be purchased.

We strongly recommend waiting for the results and specifications of the preliminary study discussed in goal # 1, before any additional software and hardware are purchased. However, with the current information available, it seems probable that the BSB's computer systems will have to be considerably upgraded within the next five years.

Objectives

1. Provide an adequate number of workstations for the application and maintenance of GIS
2. Provide an efficient work environment by creating a network of upgraded workstations suitable for handling and managing large spatial data bases within the BSB.

Resources Required for Implementation

In-house Staff: Only few in-house staff is necessary to complete this goal. Estimated Effort: 1 month.

Contractors: No contractor is needed to complete this goal.

Equipment: The equipment needed to complete this goal is acquisition of GIS software and hardware.

Materials: No anticipated material requirements are needed to complete this goal.

GIS Goal # 3 – Provide appropriate training to DPW staff

DPW staff will receive training for the proper application of ArcView. In this initial stage, Master Planning, Real Property and EMO personnel will be sent to GIS training courses. Thereafter, training will be extended to Buildings and Grounds personnel to support GIS based planning.

Objectives

1. Provide training not only as GIS courses but also as support for everyday business.
2. In addition to the basic data entry and processing, DPW staff should be able to plan and manage new GIS projects.

Resources Required for Implementation

In-house Staff: In-house staff is necessary to complete this goal. Estimated Effort: 6-12 months.

Contractors: Contractors can be utilized to complete this goal.

Equipment: No equipment needed to complete this goal.

Materials: No anticipated material requirements are needed to complete this goal.

GIS Goal # 4 – Build an extensive spatial database

Data from all DPW divisions should be inventoried and integrated into a comprehensive spatial database. Data available in MicroStation format will be converted, geo-referenced and included.

In the initial stage of the GIS set-up, an extensive effort will be necessary to integrate existing spatial data and make it available in a BSB-wide GIS. Although the actual process of converting data from MicroStation into a commercial GIS application is fairly simple, geo-referencing of all data prior to converting the file format can be very time consuming. It is imperative that a uniform datum and coordinate system is used to enable unlimited overlay and combination of different spatial data layers. In the past, military or governmental spatial data were recorded and stored in formats that are not used anymore (e.g. UTM ED 50 or Gauss-Krueger).

Attribute data linked to the spatial data information will also require standardization that

should follow the SDSFIE to comply with the current U.S. Army-wide GIS regulations. The conversion of existing data into this standardized format will also be time consuming. Large data sets are not even available in digital format.

A spatial database will provide a powerful planning tool for land use planning, engineering, and designing urban infrastructure. Plenty of data is already available in MicroStation format, such as building data through Real Property and Master Planning. Data provided by contractors such as Tree Inventory data, TES survey data, etc., as well as ITAM data can be implemented. An extensive database will save time and costs that can be used in further projects.

Objectives

1. Standardize and geo-reference all relevant spatial data as a base for an integrated GIS
2. Compile and standardize all relevant information that is linked to spatial data and integrate it into a GIS compatible database.
3. Develop a standard for all data collected and processed in future. Contractors must deliver data that comply with this defined standard.

Resources Required for Implementation

In-house Staff: In-house staff is necessary to complete this goal. Estimated Effort: 24-36 months.

Contractors: Contractors can be utilized to complete this goal.

Equipment: No equipment needed to complete this goal.

Materials: No anticipated material requirements are needed to complete this goal.

9.6 PROJECT/PROGRAMS PRIORITIES

TABLE 9.6.1

PROJECT PRIORITIES

Goal Number	Priority	Development Responsibilities
1	Important	In-house contractors
2	Important	In-house contractors
3	Important	USAREUR, In-house
4	Important	In-house, contractors

9.7 COST SAVINGS OPPORTUNITIES

The greatest potential for cost savings with respect to GIS is to translate all available data into one format. A database that provides a wide range of spatial data will enable individual units to coordinate their projects more effectively. Information flow will improve if planning data from different units are readily accessible. Any reduction in time through better dissemination of information within the 293rd BSB and between the 293rd BSB and the 26th ASG and USAREUR will save money in the long run.

9.8 IMPLEMENTATION SCHEDULE

The implementation schedule shown below is specific for the intended life span of the INRMP. It should be noted that schedules may change through adaptive management and the availability of funds.

Goal Number	Year																			
	2002				2003				2004				2005				2006			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
#1																				
#2																				
#3																				
#4																				

This schedule shows the time required to complete the work for individual goals (not the manpower). It does not necessarily reflect the time when a particular project will start.

9.9 IMPLEMENTATION FUNDING OPTIONS

Since most information technology implementation activities are not part of any specific Army program, additional software, which may need to be purchased, would probably require Operations and Maintenance (OMA) or Automated Data Processing (ADP) funds. For more information on ITAM Program funding options, see Volume III, Section 14.2.

9.10 COMMAND SUPPORT

The implementation of the GIS goals will require support from the 293rd BSB and/or the DPW commander.

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Threatened & Endangered Species List 293dth BSB Mannheim

BW/ H– Red List of Baden-Wuerttemberg/ Hesse
G – Red List of Germany
PR (§) – protected by law (Bundesartenschutzverordnung)
I – Reproduction guests
A description of the Red List Index of Germany, Baden-Wuerttemberg and Hesse is given in Section 5.11

SCIENTIFIC NAME	COMMON NAME	GERMAN NAME	BW/ H	G	PR
	PLANTS				
Vascular Plants (32)					
Aira caryophyllea	Silver Hair-grass	Nelken-Schmielenhafer	3		
Anthericum liliago	St. Bernard`s Lily	Traubige Graslilie	3		
Anthericum ramosum	Branched Anthericum	Ästige Graslilie	V		
Artemisia absinthium	Wormwood	Wermut	V		
Botrychium lunaria	Moonwort	Mondraute	3	3	§
Chondrilla juncea	Unknown	Binsen-Knorpelsalat	3		
Corynephorus canescens	Grey Hair-grass	Silbergras	3		
Crepis tectorum	Hawksbeard	Dach-Pippau	3		
Eryngium campestre	Field Eryngo	Feld-Mannstreu	3		
Euphorbia seguierana	Spurge	Steppenwolfsmilch	3	3	
Filago arvensis	Cudweed	Acker-Filzkraut	3	3	
Helichrysum arenarium	Unknown	Sand-Strohblume	2	3	§
Hypochoeris glabra	Smooth Cat`s-Ear	Kahles Ferkelkraut	2	2	
Hypochoeris maculata	Spotted Cats`-Ear	Geflecktes Ferkelkraut	2	3	
Jurinea cyanoides	Unknown	Sand-Silberscharte	1	2	§
Koeleria glauca	Glaucous Hair-grass	Blaugraue Kammschmiele	2	2	
Medicago minima	Bur Medick	Zwerg-Schneckenklee	3	3	
Nepeta cataria	Catmint	Echte Katzenminze	2	3	
Onopordum acanthium	Cotton Thistle	Gewöhnliche Eselsdistel	3		
Papaver dubium	Long-headed Poppy	Saat-Mohn	V		

Petrorhagia prolifera	Pink	Sprossende Felsennelke	V		
Peucedanum oreoselinum	Hog Fennel	Berg-Haarstrang	3		
Potentilla incana	Sand Cinquefoil	Sand-Fingerkraut	3		
Scleranthus perennis	Perennial Knawel	Ausdauerndes Knäuelkraut	3		
Silene conica	Sand Catchfly	Kegelfrüchtiges Leimkraut	2		
Silene otites	Spanish Catchfly	Ohrlöffel-Leimkraut	2	3	
Spergula morisonii	Spurrey, spec.	Frühlings-Spörgel	2		
Stachys recta	Woundwort	Aufrechter Ziest	V		
Teesdalia nudicaulis	Shepherd`s Cress	Bauernsenf	2		
Thymus serpyllum	Breckland Thyme	Sand-Thymian	2		
Trifolium arvense	Hare`s-foot Clover	Hasen-Klee	V		
Viola rupestris	Teesdale Violet	Sand-Veilchen	3	3	
Großpilze (6)					
Agrocybe pusiola	Unknown	Kleiner Schüppling	2	2	
Bovista tomentosa	Unknown	Filziger Bovist	2	2	
Geastrum minimum	Unknown	Zwerg-Erdstern	2	3	
Lycoperdon ericaeum	Unknown	Moos-Stäubling	2	3	
Sepultaria arenicola	Unknown	Sandborstling	3		
Tulostoma fimbriatum	Unknown	Gewimperter Stielbovist	3	3	

ANIMALS (106)					
Beetles (17)					
Amara eurynota	Sun Beetles, spec.	Großer Kamelläufer	V		
Amara fulva	Sun Beetles, spec.	Gelber Kamelläufer	V		
Broscus cephalotes	Unknown	Kopfläufer	2	V	
Calathus ambiguus	Unknown	Breithalsiger Kahnläufer	V		
Calathus erratus	Unknown	Schmalhalsiger Kahnläufer	V		
Carabus cancellatus	Cancellate Ground Beetle	Gitterlaufkäfer	V	V	§
Cicindela hybrida	Dune Tiger Beetle	Dünen-Sandlaufkäfer	3		§
Harpalus anxius	Black-lustred Ground Beetles, spec.	Seidenmatter Schnellläufer	V		
Harpalus autumnalis	Black-lustred Ground Beetles, spec.	Herbst-Schnellläufer	3	3	
Harpalus flavescens	Black-lustred Ground Beetles, spec.	Rostgelber Schnellläufer	1	3	
Harpalus melancholicus	Black-lustred Ground Beetles, spec.	Dünen-Schnellläufer	2	2	
Harpalus pumilus	Black-lustred Ground Beetles, spec.	Zwerg-Schnellläufer	V	V	
Harpalus serripes	Black-lustred Ground Beetles, spec.	Gewölbter Schnellläufer	3	V	
Harpalus smaragdinus	Black-lustred Ground Beetles, spec.	Smaragdfarbener Schnellläufer	V		
Masoreus wetterhallii	Unknown	Sand-Steppenläufer	1	3	
Notiphilus aquaticus	Unknown	Dunkler Laubläufer	3	V	
Pseudoophonus calceatus	Unknown	Sand-Haarschnellläufer	3	3	
Bees (3)					
Ammobates punctatus	Unknown	Sandgängerbiene	1	2	§
Anthophora bimaculata	Flower Bees, spec.	Dünen-Pelzbiene	2	3	§
Nomoides minutissimus	Unknown	Steppenbiene	1	2	§
Birds (31)					
Alauda arvensis	Sky Lark	Feldlerche	V	V	
Anthus campestris	Tawny Pipit	Brachpieper	1	2	§
Anthus trivialis	Tree Pipit	Baumpieper	V		

Ardea cinerea	Grey Heron	Graureiher	V		
Caprimulgus europaeus	Nightjar	Ziegenmelker	1	2	§
Charadrius dubius	Little Ringed Plover	Flußregenpfeifer	3		§
Circus aeroginosus	Marsh Harrier	Rohrweihe	1	4	
Circus cyaneus	Hen Harrier	Kornweihe	1	1	
Cuculus canorus	Cockoo	Kuckuck	V	V	
Delichon urbica	House Martin	Mehlschwalbe	3		
Falco subboteo	Hobby	Baumfalke	3	3	
Hirunda rustica	Swallow	Rauchschwalbe	V	V	
Jynx torquilla	Wyrneck	Wendehals	1	2	§
Lanius collurio	Red-backed Shrike	Neuntöter	2	V	
Lullula arborea	Woodlark	Heidelerche	1	2	§
Merops apiaster	Bee-eater	Bienenfresser	1	2	§
Miliaria calandra	Corn Bunting	Grauammer	2	2	
Milvus migrans	Black Kite	Schwarzmilan	3		
Milvus milvus	Red Kite	Rotmilan	3	2	
Oenanthe oenanthe	Northern Wheatear	Steinschmätzer	1	V	
Oriolus oriolus	Golden Oriole	Pirol	V		
Passer montanus	Tree Sparrow	Feldsperling	V	V	
Perdix perdix	Grey Partridge	Rebhuhn	2	2	
Pernis apivorus	Honey Buzzard	Wespenbussard		3	
Phoenicurus phoenicurus	Redstart	Gartenrotschwanz	3	V	
Phylloscopus trochilus	Willow Warbler	Fitis	V		
Saxicola rubetra	Whinchat	Braunkehlchen	2	3	
Sylvia communis	Whitethroat	Dorngrasmücke	3	V	
Tyto alba	Barn Owl	Schleiereule		3	
Upupa epops	Hoopoe	Wiedehopf	1	1	§
Vanellus vanellus	Lapwing	Kiebitz		3	§

Locusts(13)					
Aiolopus thalassinus	Longwinged Grasshopper	Grüne Strandschrecke	1		§
Calliptamus italicus	Italian Locust	Italienische Schönschrecke	1	1	§
Chorthippus dorsatus	Meadow Grasshopper	Wiesengrashüpfer	3		
Chorthippus mollis	Lesser Field Grasshopper	Verkannter Grashüpfer	3		
Chorthippus vagans	Dryland Grasshopper	Steppengrashüpfer	3	3	
Gryllus campestris	Field-Cricket	Feld-Grille		3	
Metrioptera bicolor	Twocoulered Bushcricket	Zweifarbige Beißschrecke	3		
Myrmeleotettix maculatus	Mottled Grasshopper	Gefleckte Keulenschrecke	3		
Oecanthus pellucens	Italian Cricket	Weinhähnchen	2		
Oedipoda caerulescens	Blue-winged Grasshopper	Blauflügelige Ödlandschrecke	3	3	§
Oedipoda germanica	Red-winged Grasshopper	Rotflügelige Ödlandschrecke	1	1	§
Platycleis albopunctata	Western Bushcricket	Westliche Beißschrecke	2	3	
Sphingonotus caerulans	Blue-winged Locust	Blauflügelige Sandschrecke	2	2	§
Amphibians (2)					
Bufo calamita	Natterjack Toad	Kreuzkröte	2	3	§
Rana kl. esculenta	Water Frog	Wasserfrosch	D	3	
Reptils (3)					
Coronella austriaca	Smooth Snake	Schlingnatter	2	3	
Lacerta agilis	Sand Lizard	Zauneidechse	3	3	
Lacerta vivipara	Viviparous Lizard	Waldeidechse	V		
Spiders (35)					
Acartauchenius scurrilis	Unknown	Unbekannt	3	3	
Agroeca cupreus	Unknown	Unbekannt		3	
Agroeca lusatica	Unknown	Unbekannt	3	3	
Alopecosa accentuata	Unknown	Unbekannt	3		

Alopecosa cursor	Unknown	Unbekannt	2	2	
Altella lucida	Unknown	Unbekannt	3	3	
Arctosa perita	Unknown	Unbekannt	2	3	
Callilepis nocturna	Unknown	Unbekannt	3	3	
Centromerus capucinus	Unknown	Unbekannt		3	
Ceratinopsis romana	Unknown	Unbekannt	3	3	
Cheiracanthium campestre	Unknown	Unbekannt		2	
Cheiracanthium pennyi	Unknown	Unbekannt		2	
Cheiracanthium punctorium	Unknown	Unbekannt	2	3	
Cheiracanthium virescens	Unknown	Unbekannt	3	3	
Dipoena coracina	Unknown	Unbekannt	3	3	
Haplodrassus dalmatensis	Unknown	Unbekannt	3	3	
Hypsosinga albovittata	Unknown	Glanz-Kreuzspinne	3	3	
Micaria dives	Unknown	Unbekannt		2	
Neoscona adiantum	Unknown	Heideradnetzspinne	3	3	
Pellenes nigrociliatus	Unknown	Unbekannt	2	2	
Pellenes tripunctatus	Unknown	Unbekannt	3	3	
Phaeocedus braccatus	Unknown	Unbekannt	3	2	
Scotina celans	Unknown	Unbekannt		3	
Sitticus saltator	Unknown	Unbekannt	3	3	
Steatoda albomaculata	Unknown	Unbekannt	3	3	
Synageles hilarulus	Unknown	Unbekannt	3	3	
Talavera aperta	Unknown	Unbekannt		G	
Thomisus onustus	Unknown	Unbekannt		3	
Titanoeca psammophila	Unknown	Unbekannt		1	
Trichopterna cito	Unknown	Unbekannt	3	3	
Trochosa robustus	Unknown	Unbekannt	3	3	
Xysticus striatipes	Unknown	Unbekannt		3	
Zelotes electus	Unknown	Unbekannt	2		
Zelotes erebeus	Unknown	Unbekannt	3	3	
Zelotes longipes	Unknown	Unbekannt		3	

Wasps (2)					
Harpactus elegans	Digger Wasps, spec.	Grabwespe, spec.	1	3	
Holopyga fervida	Cuckoo Wasps, spec.	Goldwespe, spec.	1	2	